

# NEBULA

SCIENCE FICTION

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NUMBER 24



DOVER  
PAPER

FOR READING THAT'S DIFFERENT

# JUPITER THE MIGHTY



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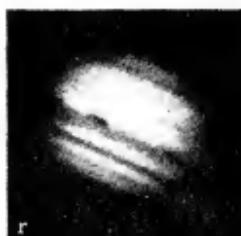
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*The Planet Jupiter photographed in Ultra-Violet, Violet, Green, Yellow, Red and Infra-Red lights respectively (Crown Copyright, Science Museum, London)*

By KENNETH JOHNS

**G**IANT of the Solar System, mighty Jupiter's enormous mass—318 times that of Earth—makes our own planet seem little more than a cosmic pebble.

Yet with this great mass is associated the small density of a quarter of the average constituents of Earth, so that Jupiter's size blossoms out to a tenth that of the Sun.

The atmosphere of Jupiter is believed to contain at least 80%, hydrogen; but the only constituents we know for certain to be present are methane and ammonia, absorbing red and infra-red light. Although they may be only present in small quantities, these two gases make the thousands of miles thick Jovian atmosphere a poisonous hell. Coupled with a fantastically-deep atmosphere where pressures rise to thousand of atmospheres, the hidden surface, frozen to an unimaginable -170 Centigrade, will probably be the last place on the planets to be visited by Man.

Great clouds of dust-like free radicals—molecules split by the fierce ultra-violet and X-ray radiation from the Sun and then quick-frozen before the molecular pieces can re-unite—forever veil the surface where ice mountains rear bleakly to a jet black sky. Liquid ammonia is probably the only fluid on the surface, surging in turgid waves and rivers across the tortured terrain, lit only by vast lightning strokes whose radio static we can hear across 500 million miles of space.

The photographs show a series of pictures of Jupiter taken in light ranging from ultra-violet through violet, green, yellow and red to infra-red. The blue end of the spectrum penetrates only a short distance into the

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# NEBULA SCIENCE FICTION

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# *Look here . . .*

Five years ago there appeared a new quarterly science-fiction magazine amongst countless dozens of others which first saw the light of day during the then current boom. These others did not stand the test of time but this one did . . . its name was NEBULA.

I do not intend to bore you with lengthy and repetitive details of our progress during the first five years of publication, for the simple reason that our astonishing advancement is quite self-evident to those who have read the magazine since its early days and any detailed account of it would be somewhat superfluous to those others who have not. What I did think would interest everyone, on the other hand, are a few "vital statistics" on the twenty-three issues of the magazine so far published.

The most important factors in the life of any regular publication are circulation and advertising. Since most large advertisers steer rigidly clear of all science-fiction publications (I wonder if they think they are read chiefly by aliens) we are left almost entirely dependent upon sales to keep NEBULA going. Our first issue appeared without any publicity or proper distribution being arranged for it beforehand . . . and sold about 4,000 copies. Issue No. 2 actually doubled this figure three months later, while the following number saw us past the 11,000 mark. Today NEBULA is one of Britain's biggest selling science-fiction magazines with a regular readership of at least 40,000. Following on a new deal which I am at present negotiating with a large American distributor our magazine will shortly be one of the largest sellers anywhere on Earth. NEBULA is already widely distributed in five different countries with smaller numbers of copies being sent to no less than twenty-six states around the globe. Total sales so far of all twenty-three issues of the magazine exceed 375,000 copies.

A touch of irony is, however, the fact that there is a far greater demand for NEBULA in Sydney, Australia, than there is in Glasgow, Scotland, the city in which the magazine is edited and published.

Turning our attention to the contents of the magazine, I find that we have published almost 1,000,000 words of science fiction stories to date, made up of 132 separate yarns by 47 different authors. Our longest novel was E. R. James' "Robots Never Weep" which filled 104 pages of NEBULA No. 1, while the shortest was probably "Atoms and Stars" by Forrest J. Ackerman (in NEBULA No. 2) which was only one-and-a-half pages long.

Of our total wordage 91.9% has been written by British authors,—no one can say NEBULA is not British and proud of it—7.3% by Americans and .8% by "others." Of the American stories only 31.9% were reprints, while almost all the British stories were new. This means that only about 3.2% of all our stories have ever appeared elsewhere previously. In contrast to this, almost 12.8% of material which has appeared for the first time in NEBULA has since been reprinted by other magazines, ranging from the famous American "Saturday Evening Post" to the Swedish monthly "Hapna."

# The Ties of Iron

*They were aggressive and dangerous machines but who could tell from whence had come their intelligence?*

Within three hours of landing on the red and dusty ball of the planet they'd named Baskerville, the crew of the Terran Survey Scout *Gladius* were aware that not only was their journey pointless, it was distinctly dangerous. As Martin the biologist said "The dim-witted things are crazy! And they grow!"

To which, acidly, Ferrari, the metallurgist, replied "That's impossible. Only I've seen it myself, and you're right."

The majority of the crew were filled with the honest conviction that they ought to lift jets right away and leave Baskerville to its dust and its ghosts. The scouter sat a half-mile from the cliffs that gashed a straight line north and south from horizon to horizon, and her tall shadow pointed across the firm-packed sand towards that mighty scarp.

Baskerville's large and ungainly sun wandered down the sky; calculations told Loftus Tait that in three hours it would be dark. He stood in the shadow of a fin, listening to Martin and Ferrari wrangling, trying to make up his mind what he ought to do. Loftus Tait was the ship's exec, a tall, thin, dry professional spacer. From the moment he'd joined *Gladius* his position had been invidious; Jefferies, the Commander, was gradually losing his battle with the bouts of space cafard that wracked him. And Tait received the full force of his superior's disease-spurred wrath.

He managed to twitch his lips into a smile and stepped out into the sunshine, feeling its warmth flow over him like a cloak. He brushed the palms of his hands down his regulation green coveralls.

"I haven't had the pleasure of meeting the Baskers," he said pleasantly, "but I don't think we ought to run away."

Martin was young and impetuous. "We're not running away if we report back to *Saumarez*, are we?" he demanded. *Saumarez* was the mother ship, controlling her brood of scouter detailed to explore this eight light-year diameter globe of space. Tait scratched his ear slowly, an affected gesture he used when he wished to draw attention to his words.

"*Gladius* has been detailed a job, Martin. It's up to all of us to carry out orders to the best of our ability."

"But it's no *use*!" Ferrari protested forcibly. "We can't get near the city under the cliff."

Martin broke in heatedly: "I'm wearing my number ones now. Why? Because a Basker took a chunk out of the seat of my pants, that's why!" He glared across at the sun reflection brightening on the wall of orange rock. "And darned lucky it didn't take a chunk out of me, too."

"Tell me about these Baskers," Tait began, and then his words were slashed by the piercing shout from the knot of crewmen running in towards the ship, their shadows long and leaping behind them. They ran like men demented.

In their rear, running a few steps and then turning to fire his rifle, an officer was attempting to act as rearguard. Tait saw it was Dollins, the second. And then his whole attention was taken by the thing that jounced and bounded in pursuit of the knot of fleeing men.

Shaped like a banana, humped back turned towards the red and angry sky, the Basker bowled briskly along on ten disc wheels. Dust spurted in a long trail. At various points on its body metal gleamed. Thrusting from its forward end Tait caught fragmentary glimpses of the jaws that had done the pant-wrecking damage to Martin. The thing looked grimly efficient, malevolent—and grotesquely funny, as though it were some Chinese dragon of legend brought by technological wizardry to panting life. Tait even found his lean face breaking into a smile as he looked expectantly for the fire that should be breathed through flaming nostrils.

Then his duty as an executive officer of a Terran Survey Scout took over. He ran quickly forward, shouting to the men who rushed from the ship. Before they could do anything more the whole tragedy was finished.

Dollins had turned to fire. Tait saw his shells exploding on the thing's back. Little sparkles of flame glowed and chunks of metal flew. The steel jaws closed on the man. His wildly kicking body was hoisted. Tait's mouth went dry. Then, against all expectations, as the fire of the crewmen from the ship stopped, the thing

wheeled and fled for the mountain. Its wheels squealed quite plainly in the silence.

"It took Dollins!"

"Get the thing, quick!"

"Hold your fire." Tait felt sick. Dollins was still alive.

Commander Jefferies acid voice sliced down from the airlock, fifty feet above. "Open fire at once! You must destroy the monster."

One or two men loosed off a round: but their hearts weren't in it. In the fading light behind, the strip of reddened cliff looked like a mighty band, girdling the world. Against that redness gleamed the metallic hide of the Basker and silhouetted on either side Dollin's arms and legs writhed feebly. A shell burst directly on the near side after wheel.

The Basker did not falter. "It's getting away," Jefferies called. "Fire."

But all the men had seen. From the spinning axle stub the remnants of smashed wheel had been discarded; and even as they watched and the thing vanished into the orange blur under the cliffs, a new wheel began to grow from the axle.

"That's impossible," Ferrari said in a voice that showed he didn't believe himself.

Loftus Tait didn't believe in the impossible. If a thing could be conceived then, one day, that thing would come to pass. He might not be around at the time; but one day, as surely as Earth was spreading out into the Galaxy, someone would find a way to figure the problem out. And Tait was cocky enough to believe that the Terran Survey Corps would have a finger in it somehow.

He glanced quickly up at the airlock. Commander Jefferies glowered down for an instant, his slack white features pathetic and eloquent of a man wasting away. Then he twisted round and stamped into the scouter. Tait ran lightly up the ladder, ignoring the lift, and went through to the control room. Young Samson, the Ensign on his first deep space trip, smiled up from his chess board.

"Hulloa, Number One. What's all the excitement?"

"A damn Basker snatched Dollins. Where's the skipper?"

"In his cabin as far as I know. Hell, that's bad about Dollins." Samson's young face expressed grief and shadowed horror; but no fear. Tait liked young Samson.

"It's bad, young 'un. But it's no excuse for bad language, at least on youf part."

He left the control room and walked briskly through to the

skipper's cabin. Samson had been the only other man apart from Tait who had expressed the thought that they should stay awhile on Baskerville. Tait wondered cynically if it was going to give the lad bad dreams when he thought of Dollins.

He knocked and went in. Jefferies put down the whisky glass with a trembling hand.

"Well, Number One. What is it?"

"That machine took Dollins alive, skipper. Request permission to take a volunteer party after him."

Jefferies slopped whisky. "Request refused, Number One. You can't seriously expect me to agree, can you?"

"I rather thought you wouldn't." Tait could feel no anger for this man. A lifetime of deep spacing had wrecked him physically. When a bout was upon him then he was not responsible for his actions. And when he was well, as now, there was every reason for his mind to rebel at his own weakness, to seek frantically to bolster his own ego. Tait could feel no anger; but he could feel pity and a deep, biting frustration that he should be saddled with such a man.

"Look, sir. Dollins must be in that ruined city now. We only decided to drop down here when we spotted that. Let me go after him, that way we'll kill two birds—"

"You'll kill all the men you take, you mean."

"Shall I muster all hands, sir?"

"Muster hands? What for?"

"You'll want to speak to them, won't you, sir? About Dollins. And about our job on the planet."

Jefferies swallowed whisky deliberately before he replied. His hands had ceased shaking. "I do not need you to tell me my duty, Mister Tait. I shall talk to the men when it is necessary. As of now, it is not."

"I understand, sir. I thought that you might like to reassure them. Baskerville is a spooky place. And some of them have been talking a little wildly about our leaving."

"I have decided we shall blast off in one hour," Jefferies put emphasis on it. "Ready the ship, please, Number One."

The refusal to allow him to go after Dollins—old cheerful, red-faced, back-slapping Dollins—had not really penetrated to Tait's inner self. Now that he had received the direct order to leave the planet and to leave Dollins, it penetrated with the shock of an icy plunge.

"But you can't leave old Dollins out there with those machines! It's—it's monstrous!"

"Are you disobeying a direct order, Mister Tait?"

That sobered Tait. "I've never disobeyed a legitimate order in my life, sir, and you know it!"

"Very well, then. Do your duty."

"But, sir—there's a ruined city out there. A city that might be half as old as time, waiting for us to explore it, uncover its secrets. That's our job in the Corps. We cannot allow a few clanking machines to stop us."

"Am I to understand that you are refusing my orders, then?" Jefferies' was not a pleasant expression and Tait stared at him with the despair any thinking man must feel when gripped by an iron discipline that has not taken into account the possibility that one day orders might be issued by a moron or a madman or by a man sick to death by space.

"I appeal to you, sir—"

The white puffy face was suffering now, Tait saw that, Jefferies said: "Space knows the Survey Corps is a free-and-easy outfit, Mister Tait. We don't believe in the rigidity of the Navy. But, by thunder, I've given you an order and you'll obey it or I'll have you stripped!"

The force in his words and the shaking tremour that gripped him should have warned Tait. As it was, Jefferies abruptly ground out a choked groan, his eyeballs rolled up and he slid to the deck. Tait bent over him. The skipper was out cold. And Tait saw that the space disease had gripped him in the most severe bout the sick man had yet experienced. He would be helpless, unconscious and in his waking moments drooling like an infant, for a week at least.

Tait rang the bell for assistance. His eyes were calm and level and dispassionate when the steward answered and the hastily summoned doctor attended to Jefferies. But inside, he was aflame.

Doc Barttlet looked up at him from the bunk. His big square face with the wise, kindly eyes was grave. "It's bad, Loftus. He's weaker than he's ever been. I'd say a week."

"That's what I thought." Tait was holding a tight rein on himself. He had to think out every step he now took.

"I was passing the skipper's cabin," Doc Barttlet said simply. "Heard his voice. Raised. Went straight off to my own cubby; but I couldn't help overhearing. Take off in an hour." Doc shook his head, looking at Tait.

"I'd take it as a favour if you'd forget that, Doc."

Doc Bartlet was more than just a Survey Corps doctor to Loftus Tait. He was the only real friend he had aboard. The position of second in command is never pleasant—even when things go right—when the skipper's incapable and the second has to take over without appearing to do so. Both from above and below, he's pinched. Young Samson, now, he was a fresh, happy, eager youngster. And yet even with him, Tait could not relax. But with Doc it was different. Doc was a being apart from the normal discipline, a law unto himself.

"Don't forget, Loftus. You're in command now."

"Yes. I'm in command. Until Jefferies comes round. And then what?"

"And then he'll have expected you to have obeyed his last orders. That's discipline."

"Discipline." Tait shut his eyes hard until green spaceships flew. Then he opened them. "I'm in command now. I can see my duty quite plainly. And I know what my first orders are going to be."

Doc's face, as Tait left, was wry with the compassionate pity of a friend who sees you hell-bent on self-destruction.

To Tait, clattering down the ladder and rapping out instructions, the great decision had been taken. He decided that now he'd crossed his Rubicon he'd forget all about it until it came to justifying his actions to Jefferies. The honour of the Corps, a friend kidnapped by machines, his own imperfectly understood but overmastering principles of conduct all called to him to take the only course a Survey Corpsman and gentleman could take. He fully appreciated the danger. If he slipped up and things went wrong, then he, as an officer, was finished. His career, the belief that as an Earthman his job was to help spread the culture that had dragged itself through warfare and juvenile madness to a state of development impossible of conception two thousand years before, his whole being and personal convictions—all would suffer if he failed; but to Loftus Tait duty was something that must be interpreted with a tolerance and an eye to the needs of the moment unforeseen when the rule books had been written. He felt gay as he jumped the last four rungs.

Pilot Lonnegan stood under the hull, staring at the sky.

"Lonnegan, are you game to take your flier over there? We're after Dollins."

Lonnegan, like most of the young flier pilots, wore a short wind-proof with a huge fur collar and carried out every action with a con-

scious panache. He smiled.

"Hop aboard, Number One."

There was no difficulty in finding a volunteer party. Everyone had felt that it would have been best to have lifted off Baskerville; now that one of their number had been taken alive, they wanted him back. There was no mock heroism; just a quiet-spoken determination.

The flier scudded low over the ground. Two hours left before sunset. Shadows were long and sentinel-like beneath them. Ahead, the height of the cliff had been reduced in perspective by their own altitude; but nothing could diminish the impressive length of the wall as it marched out of sight over opposite horizons.

Field glasses were trained on the scattered ruins beneath. Sand and drifted dust covered broken columns. Tall spires rose from mounds of rubble. Streets were plainly visible, their surfaces rutted. The city had been small, huddling against the scarp and Tait wondered what had happened to its builders. Perhaps, like the ancients of Sol's Mars, they had faced a dying planet with dwindling resources, until in the long twilight of their race they gave up hope and mingled their bones with the dust that eternally blew over the dead face of the world.

"Groups of Baskers all over the place." Young Samson pointed. His eager face and youthful enthusiasm touched Tait.

"Keep your eyes peeled."

"Wilco, Number One."

Tait looked for any small sign that might tell him where Dollins had been taken. There was a strong possibility that by this time he was dead. Unpleasant as the thought was, perhaps that might be for the best.

"Most of the tarnation things go into that there hole." Tait followed Winslow's pointing finger. Winslow was the ship's philologist and liked to use any odd phrasing that popped into his mind in unconscious rebellion against his own profession. The men said he could read bird tracks and turn them into a dirty story.

The hole was the cleft leading to a cave, Tait guessed. Probably in there was the lair—if that was the right word—of the mechanical runabouts. "Drop lower," he told Lonnegan.

The sun shone directly into the cave entrance. Ruts showed heavy traffic used it. Three of four Baskers of different types were circling aimlessly outside, their steel jaws champing. Tait stared at them.

"Hey," Samson said. "They can hear us but haven't worked out we're in the air above them."

"You could be right, Sam," Tait said, pleased at the lad's quickness. "Perhaps their builders had no knowledge of aircraft and so left that out of their robots' think-tanks."

"They're first class watch-dogs, flying or no flying," Mitsubishi, the other crewman, put in sourly. He had been one of those running when Dollins had been snatched.

"How do we get into that dog-manger in the wall?" asked Winslow. He crinkled up his freckled face and lowered the field glasses to stare at Tait. "If old Dollins is in there it's going to an onerous occupation winking him out."

"It's a tough job, sure. I'm beginning to think we'll have to mount a full-scale operation." He nodded towards the 1 mm machine gun in its turret aft. "Climb in there, Mitsubishi, and keep those Baskers off. Lonnegan, hover about eight above the entrance. Sam, get ready to shove the rope ladder over fast."

"You're not going in alone?" Winslow said.

"Just having a quick look. We should be safe in the air."

"I'm with you."

"Me, too," said Samson.

"You'll both obey orders. On foot no one would stand a chance. I told you, I'm just looking, for now."

"Wilco, Number One." But Samson shook his head.

Tait climbed out and shinnied down the ladder, hung swaying beneath the flier, his head on a level with the cave entrance roof. Lights extended dimly along the floor, green lamps that were probably radium bulbs or some other isotope that had an even longer half life. The age of the place hit Tait. Where the Baskers' wheels had rutted the floor he could see rock. On either side the dust was polished smooth by the passage of their bodies. It formed a solid coating, like packed fur in a pipe, around the side and curving overhead.

A Basker with six wheels and hose-pipe face trundled out. The head was a scant two foot below Tait's legs. The metal was smooth, shining with oil, efficient. There was not a single dent or scratch on the robot's hide. The electric humming of its intestines came quite plainly to Tait.

From the flier came the fluttering chatter of the radio. Tait wondered who in blazes was calling up now. The Basker had not moved. His hose pipe slowly uncoiled.

Lonnegan put his head over the side. "Hey, Number One! The ship's signalling but I can't make head or tail of it. Just a racketting whine."

Tait had seen enough. His flier team could not break into the

tunnel. They would have to think out a plan which meant in all probability that they'd have to immobilise any Basker that got in the way. In other words, they'd have to fight their way in. And they didn't know that Dollins was in there. He looked up.

"You can tell the ship we're returning," he said.

Lonnegan's head disappeared. Tait, lifting his foot for the return journey, was never quite sure of the sequence of events. He must have had one foot in air, groping for the next rung, when Lonnegan sent out his radio call. Then Tait was gripped by the leg still on the ladder and a frighteningly powerful force was dragging him down. Mitsubishi's machine gun opened up with a hellish racket.

Tait fell onto the ground with enough force to wind him. He lay on his back, staring upwards. Two legs straddled him. Through the arch thus formed he saw Baskers wheeling in towards him and the man standing over him. Tait rolled over, away from the legs and pulled out his handgun. A Basker exploded and then another curved away trailing a complete side in the dust. Mitsubishi was making good practice.

The ladder brushed Tait's shoulder. He reached up and gripped it. He shook his head which rang like a champion campanologist's benefit night. Dazedly, he saw that young Samson had dropped down; it was he who had stood over Tait. The Ensign's rifle blazed.

"All right, Sam!" Tait croaked, spitting dust. "Get up the ladder."

"After you, sir! You're hurt!"

"Hell and damnation, Sam. I'm all right!"

Then Winslow had clambered down, grabbed Tait's arm and was hauling him up. Tait felt the situation slipping away. He made a tremendous effort. "Winslow! Leggo! I can make it—keep them Baskers off young Sam!"

But it was too late. A snapping jaw, a curving red glitter of steel, and Samson's torso toppled into the dust. His legs were gone, chopped clean by the robot. Tait's handgun blasted the robot's head. It reeled drunkenly off and even as it staggered away a new head began to grow from the metal.

"Sam!" Tait felt nausea and fought it with bitter self-anger. He shook Winslow's hand off and dropped down. Blood was welling from the great severed arteries. There was so little time! He bent and then a Basker's claw, extending on a metallic tentacle, caught Samson's left arm. Tait pulled.

Samson was held in a vice-like grip. Tait put his handgun into the claws' junction and pressed the trigger. The claw vanished and

with it vaporised away Samson's hand.

Tait felt the roaring in his head. He felt hands take Samson and pull him aboard with the chattering madness of Mitsubishi's machine gun filling the world with noise.

His next sane impression was of Doc Bartlet bending over him. Tait sat up. He was in his own bunk, with the metal overhead above with its pictures of sailing ships of the seas of Earth four thousand years ago. He felt weak but perfectly in control of himself.

"How's young Sam?" he said in a whisper.

Doc's face showed no recognisable expression. "I got to him in time and plugged up the leaks. But the kid will never walk again. And his left arm's gone. I've got him under sedation now. Wanted to talk to you, Loftus."

"It was my fault," Tait said. "My fault." He closed his eyes and saw Samson lying there in the sand. He opened his eyes. "I should have lifted off, like Jefferies—"

"You followed your duty as a Survey Corpsman, Loftus. It's useless and foolish to blame yourself. It could have happened to anyone and at any time. You know that."

"Sure! I know that. But can I feel it?"

"You're in command now, Loftus. We depend on you. Dollins is gone. The skipper's incapacitated. You've got to pull yourself round and act like a man, not a whining child."

It was rough, crude therapy; but it snapped Tait's incipient collapse. He pushed himself off the bunk and stood up, swaying slightly.

"Right you are, Doc. Where's Sam?"

"In the cockpit."

Tait stood for a long time looking down on Samson. The Ensign was ghastly pale; Doc had a whole-blood transfusion going and Winslow was rubbing his arm and looking miserable. Mitsubishi was donating at that moment. Winslow caught Tait's eye at last and nodded. Outside, in the corridor, Winslow nearly broke down. He felt that it was all his fault. If he hadn't tried to drag Tait up, then Sam wouldn't have—

"Stow it, Win. That's an order." Tait knew you couldn't give orders to a man's emotions. He used Doc's technique. As it had on him, it worked on Winslow. Then, Winslow quite obviously became filled with an icy rage.

"Look, Number One. I noticed something peculiar on the cliff face. Looked like markings. I'd like to have a look."

"All right." It didn't seem to matter now to Tait.

Baskerville possessed a twenty-eight hour day and night cycle and for the rest of the night Tait took what sleep he could between lying awake and thinking unpleasant thoughts and talking in low-voiced conversations with Doc and Winslow. Samson came round and under the therapy techniques long developed was, by the time dawn poked scarlet fingers into the night's domain, perfectly sane, completely in control of himself and without anything the matter with him—apart from the loss of two legs and an arm.

Tait followed Doc out of the cockpit and halted the older man. "Look, Doc. Can you fix up some prosthetic limbs for him? At least enable him to get about?"

Doc chewed his lip. "The problem is purely engineering, Loftus. I'm quite capable of performing the surgery and Sam has control enough left to handle complex prosthetic limbs. But making them."

"The engineering staff—"

"Oh, sure. They'll co-operate. I've emergency stuff in store, in case a man loses part of his arm or his foot. But this is a major job, Loftus."

"I realise that." Tait found he was scratching his ear, and immediately desisted. "Look, Doc. You can fix Sam up with the arm okay?"

"Yes. That's the least problem of the three." Doc flexed his fingers, looking at them. "It won't be one of those synthidermis jobs that look like the real thing. It'll be just a metal frame with skeleton fingers, so's he can do things."

"And for his legs," Tait said bitterly. "We'll take a leaf out of the Baskers' book!"

Just after breakfast, Tait came across three men in a heated argument. Philology, Metallurgy and Biology, all yammering away at one another with jaw-breaking words and much arm gesticulating. Tait left them to it. Later on, Winslow, having spent most of the morning taking photographs of his wall paintings and carvings, sought Tait out.

"Number One," he said earnestly. "Those wall pictures are about the most important find so far. I figure they are the last record of these people before they died out."

"That's important, Win," said Tait in a dead voice.

"They painted a record in universal terms. Their own language only comes in at the end, a sort of appendix." Winslow was excited. Tait roused himself. The philologist must be on to something.

"Tell me, Win," Tait said. Martin and Ferrari joined them, both obviously bursting with the same eagerness.

Winslow said: "The people who built that city are not dead. They are not extinct."

Tait wondered if Winslow had cracked; then he said: "All right, Win. Where are they?"

"You'll spot that yourself. Listen, Number One. These people were running out of resources. They were seeing all organic material on the planet fade and die. Everything was sliding back to inorganic barrenness. They tried plenty of tricks; but they couldn't beat that trick of nature's."

"Transmutation of elements, Win. We can synthesise our own food."

"Sure. Evidently, these people couldn't—or didn't bother to. They had something better!"

"Come on, Win, out with it."

Ferrari broke in: "Metal that grows itself under control. Crystal, Number One. Controlled inorganic growth."

"Well, you might have let me—" began Winslow.

But Tait had seen it all. "You mean that when these people faced extinction, they turned themselves into metal monsters, the Baskers?"

"More or less. The pictures tell the story. They were left to guide later comers. I figure it this way." Winslow showed Tait various shots of the sculptures and paintings on the rock wall, unweathered in the dry, moisture-free air. "Here they are with what are forests fading. Then the water vanishes. Now here is a machine. Simple. Body, wheels, motor, mineral oil and radio-active isotopes for power. It's plain as as the tubes on a ship."

The photographs showed various stages in the manufacture of the Baskers. And then, half-way along the row, people, recognisably humanoid, appeared. Tait called for Doc Bartlett on the loud-hailer but was informed that he was in surgery. He resumed his scrutiny of Winslow's pictures.

"Here, and here," Martin said. He was the biologist with a jealous eye on his preserves. He pointed. "They detached the brain from the body and connected up the final nerve endings to the machine controls. In theory, we could do it ourselves without too much bother; but in practice, well—" he drew his mouth down expressively. "A tough one."

"So we have brains controlling metal bodies. Neat. But how about Ferrari's pet theories?"

Ferrari beamed. "I believe, gentlemen, that this planet has given us the most important piece of scientific knowledge for some time. For replacements, these people simply used a crystal matrix and flowed their damaged portions away and replaced them by new growths. We've done something similar; but nowhere near on the same scale."

"And yet," Tait said quietly. "They didn't conquer space."

Winslow smiled. "Some races have particular aptitudes. Ours is what it is. Theirs, well, theirs ran along different channels."

"I don't know that I can go along all the way with this theory, though," Tait said, deliberately probing.

"But, it's obvious—pictures—only possible answers!" they cried together.

"Maybe so, gentlemen. But if it is true, then what does it imply?"

The three experts looked at him.

"If this—changeover—from an organic to an inorganic body was regarded by these people as a mere matter of routine, just another milestone in their racial history—as you seem to suggest, why should they put up these tremendous placards to announce the fact? You gave me the impression that they were a sort of last will and testament."

"Perhaps they weren't sure they'd succeed," hazarded Winslow.

"They'd have tested before committing themselves," Martin said. "No, Number One's right. There's something else in the story we haven't spotted."

"Well, whatever it is," Ferrari purred. "We must have the details of the metal re-growth. It's important."

"We'll take out a large-scale party," Tait said. "We're after Dollins, we're after the metal techniques, and we're after catching us a Basker." He smiled ferociously. "But there's another minor point that you three gentlemen appear to have overlooked."

"What's that, Number One?"

"If the inhabitants of this planet engineered new bodies from metal, running on radio-active isotopes and with regrowth facilities—and then placed their brains in these spanking brand-new bodies, I'd sort of expect them to act like people. They'd still be people. Not robots."

The three experts stared at Tait and then at one another. Tait went inexorably on: "Since we've been down here on Baskerville they've done nothing else but chase about like blue-winged flies, acting like a herd of crazy sentries. They struck me as being robots left by

the dead people to guard the city, probably no one bothered about shutting off their guard-commands at the last, and so they carry out their orders and ward off strangers for ever, or until the planet falls into the sun. But now we have this new theory." At Winslow's impatient movement, Tait conceded: "Or, fact, judged by Winslow's pictures."

Ferrari said slowly: "I'm a mineralogist, *inter alia*. What you need, Number One, is a first class psychologist."

Tait nodded. "My thoughts precisely. At the moment he's patching up one of my mistakes. It makes me feel real good." Tait turned away abruptly and blundered off. As the current commander, he should not betray his emotions in that way before his officers; bad for morale. He wondered why everyone seemed so damned decent to him after that.

The next expedition to rescue Dollins was a complete failure. The Terrans used six fliers and four ground cars. Only by the most skilful use of tractors and by pumping their ammunition boxes dry, were they able to extricate themselves from the horde of Baskers and to beat a ragged and undignified retreat to *Gladius*. The Baskers showed no inclination to attack the ship after a number had been whiffed by her guns.

"Brains!" Tait said disgustedly. "They're mere robots, ordered to stop anyone getting into the city."

He slouched off to the engine room. Charlie Chapman was old for the Survey Corps; there were few better chief engineers in space. He held up a skeleton of an arm and clucked approvingly. Doc, standing at his side, turned to smile tiredly at Tait. Doc's impeccable white overalls were creased and stained and anything but impeccable now.

"A last minor alteration," he said. "Sam is crazy keen to get his new arm and legs. He can handle this arm to shave himself, it's that well balanced."

Tait said: "He's too young to shave."

"Oh." Doc gestured to the wheeled contraption. "No good at all. Using a bomb dolly was stupid, anyway."

"It was a try. What next, Charlie?"

"We build a complete wheeled base Sam can fit his stumps into. I couldn't guarantee legs. Too dodgy."

"Wheels was Number One's idea," said Doc. "And wheels it is. We'll finish up by tomorrow, I promise."

By the time that Doc had made good on his promise and Samson was gingerly and with incredible disbelief in his own good

fortune—he was that sort of kid—running himself up and down the packed sand outside the ship, another day had gone. Against the red rampart the Baskers glinted in the sun. Doc touched Tait, who was watching Sam, on the arm. His face was grey. "You realise, Loftus, about Dollins?"

"You mean that he'd be starved or dead from lack of water? Yes. I'd realised."

"Are you going to lift off? Young Sam is okay, now."

"Okay?" Tait laughed, a most unpleasant sound. Tait was a man who had always thought he saw his duty plain and straightforward before him in the Survey Corps; but, equally, he had the knack of seeing both sides of a question. He knew that whatever good may be said of such a gift, it was a weakness in a military setting; and now he felt he had betrayed himself. A young kid with his life before him had been washed up. It was a sour taste that he felt he'd never rid himself of in this lifetime. "Lift off, Doc? What about the Corps duty to discover this metallic secret Ferrari's on about?"

"Loftus, it's your pigeon. Yours, boy, all yours."

"One last try, Doc. One last try."

Tait came back to *Gladius* like an old man. He had made that last fling a strong one. Fliers, ground cars, rifles, the Terrans had gone in. They came back with a caged and raging Basker, trapped in lines of force against which it flung itself with insensate ferocity. But they came back without Doc.

His ground car and its six occupants had been toppled over and then dragged within the tunnel. It had been over before anything could be done. Twenty times Tait charged the entrance, penetrating some way in before solid masses of miraculously regenerated Baskers forced his car out. The metallic monsters seemed to be replacing their blasted off parts quicker and quicker, the more they were shot at. Adaption, Ferrari said, gloomily.

Tait trudged through the sand towards *Gladius*. Sam wheeled up, his young face graven with fresh anachronistic lines. "Number One," he began. "Can I have a word—"

"Some other time, Sam," Tait said roughly, and walked on. Sam stared after him, hurt showing in his eyes.

Tait tried to shut out of his mind the picture of Doc, dragged inside that tunnel, of the Baskers scurrying. He wished he drank, and flung himself on his bunk, stared blindly at the pictured clippers and galleons. Life was hell! The more you tried to do your duty, the more you fouled it all up. At last he roused and went down to the

control room. Then, cursing, he came back and carefully washed, and shaved—he'd not used a permanent depilatory this trip as he'd had a crazy idea of growing a moustache—and entered the control room spick and span and debonair. His mouth twitched every now and then. He felt the biggest heel in the galaxy.

Without Doc around he felt lost, alone, cut off from normal human intercourse. Samson was sitting in his wheel chair; its motor hummed softly.

“Sorry, Sam. What did you want?”

Samson's voice faltered. Then he thrust his chin up. “Permission to go into that tunnel, sir.”

“Permission to do what! Are you crazy?” Although, Tait, realised numbly, if Sam was, then it was Tait's fault.

“No, Number One. I've been talking to Ferrari and Martin. And also to—to Doc, sir. Communications picked up short range frequency modulated stuff pouring out of those Baskers when they approached. They figure the range is only about twenty yards or so. They think the Baskers talk to one another like that.”

“I see.” Tait knew why he hadn't been informed. He'd been on his gun-waving expedition and had shut himself off immediately after that fiasco. “Go on, Sam.”

“Winslow is trying to decipher it, but he says it's a long job. But it proves they're people, doesn't it, sir?”

“Perhaps, not necessarily. So you want to go in?”

“I had the idea that—well—” Sam gestured at himself. “You see, Number One. I'm like them now. I'm part mechanical. I figure I can get in there—they'd let me.”

“Maybe. It's an idea. But it's not worth it.”

“Doc fixed me up, Number One. He did a good job. Now Doc's in there.”

“It's not worth your life as well.”

“I owe it to Doc, sir.”

“No.”

“Please.” Samson was sweating.

“Doc was my pal, too, Sam. I killed him, just as I put you in that chair. I don't want your death on my conscience as well.”

Samson was young; but he had tasted bitterness. He said: “What I am I owe to Doc. If it hadn't been for him I'd be dead. Oh, I know it's his duty. But he saved me; saved me for what?”

“Sam—”

“For what? Do you think I want to spend the rest of my life like this? Crippled? in a wheel chair, however fancy they make my

new prosthetic limbs aboard *Saumarez*! I tell you, I'd sooner be dead!"

"Sam!"

"Duty of the Corps!" Samson was shouting. Crewmen turned scared faces. Tait ignored them. "You can't stop me from going in there! I'm going after Doc! I'll get in. Sure, I'll be allowed in. I'm part metal, too, aren't I? I'm one of them!" Samson's shoulders were shaking so much that the wheel chair creaked. His face was tortured, like his body. "I'm a metal monster, too."

"Lonnegan!" Tait roared, angry and hurt and hating himself. "Grab a crew and take Sam over there. Put him down outside that hole. And rig a TV camera on his chair and communicators. We want to see what goes on. Move!"

"Wilco!" Lonnegan's voice came from the speaker.

And then Loftus Tait, Terran Survey Corps, went to his room and lay on his bunk and did not think until they came to tell him that young Samson was inside the cave and the TV screen was showing the impossible. Tait went to the control room.

His heart leaped like a ship lifting off. The screen showed a widening out of the cave, with Baskers forming a ring. Sitting quite comfortably on the floor, Doc, the five other men of his crew, and Dollins, were staring into the camera, their faces expressive of complete disbelief. They scrambled to their feet, spilling gourds and crumbs of food. Doc pointed to one side. As Sam turned, the camera panned.

Onto the screen flowed the age-old dust of the floor. In that dust many pictures had been scribbled, erased and drawn again. The sound of the machines' engines and the men's breathing formed a sort of threnody of pleasant, quiet sound.

"Yes, yes, we're all right," Doc said. "This food is apparently synthetics, proving these people—"

"Are they people, Doc?" Tait said harshly.

"Yes. Dollins figures the same way we do. They want to put his brain into a Basker. So far, he's dissuaded them."

"Can you move about freely?"

"Yes, now that young Sam has arrived. They accept him. We've had quite a talk with them via these drawings."

"That can wait. Can you walk out, d'you think?"

"We'll try." The Baskers were moving uneasily now, as Doc talked. "The transmission must be getting through to them as a garbled speech. There's a tragedy here, the thing that was missing. The thing we couldn't figure out."

"Get out of there, Doc, and talk later."

Doc and Dollins and the others moved out of range of the camera. Walls showed, eerie in the green light washing upwards from the floor. More pictures, this time formal, standardised and clumsily executed. As though drawn by machines. Cameras aboard *Gladius* whirred as they recorded everything. The tension of the situation had not lessened.

Winslow, watching the screen focused across the plain on the city with stepped-up magnification, said: "I can see them. There's Doc. And Dollins and the rest. They're out of the cave."

Tait waited rigidly whilst the flier brought the men in. The camera strapped to Samson's chair still showed the walls and the green light. Something of that stifling closeness in the cave filtered through to Tait. "What are you waiting for, Sam?"

"I'm checking over these drawings." Samson's voice was odd, off-key, choked. "I've found what Doc found. I feel sorry for the Baskers."

"Well, come on out. We're waiting for you. And, Sam, we're proud of you, son."

"Proud? You needn't be. I'm not."

Doc and Dollins entered the control Room. Both looked tired and drawn. As soon as Doc saw the TV set-up, he said: "Sam! Hurry, son. They might break again soon."

"Just a minute," Samson said, his voice a whisper.

"What's it all about, Doc?" asked Tait, uneasily.

"Simple. The ancients feared things might go wrong. They put up those huge drawings on the cliff as a warning to anyone—like us—who might stumble across them. Once you mingle an organic brain and inorganic muscles and heart and limbs, you run the risk of some of that inhumanity entering your thought processes. You run the risk, instead of making the machine body obey the brain, of the brain succumbing to the body. Some Baskers succumbed almost immediately. Others held out." Doc wiped his face. It was drenched. "The poor devils were aware of the problem; but by that time they had no other choice. They had to change over. And the sentinels marched under the command of their bodies, growing new limbs and wheels and heads—the brains are protected inside the bodies—counter-marching to protect the surgery going on inside the cave. Guarding it for thousands of years. The pictures they drew were pathetic, terrifying, really, in their implications."

"Trapped in their own bodies," Tait said. "Poor Baskers. And I suppose they refused the surgery you offered?"

"How could they do otherwise? Half of them are just robots now. The rest are sliding down. Their convictions that they are right are such that they were preparing to transplant our brains. Only Sam's arrival convinced them that we could do it; they seemed happy to see us go, as they thought, for surgery. They bear no relation now to the people who painted those great pictures outside. If we went in there alone they'd act exactly as they did before."

"They want to convert the universe," Tait said. He turned to the screen. "Sam! Come on! What's holding you?"

On the screen the walls shifted as Samson's chair moved. Baskers were scrawling fresh drawings.

Samson said: "There's a great deal to be learned here, Number One. A great deal. I think I can get the metal regrowth process out of them; there are records."

"Leave it. Return to the ship."

"I've never refused an order in my life," Samson said, and Tait recognised the words. "But now, I think I must. Leave me here, Number One. *Saumarez* can always send you back later on, if they want the secrets."

"Sam!"

Doc put a hand on Tait's shoulder. Tait's own emotions boiled. He'd followed the path of duty well enough! He'd disobeyed an order because he thought that the corps demanded it, because Earth was spreading out to the stars and needed all the information she could find on the strange new worlds of the galaxy. And so he'd let his own pride full rein, he'd followed the siren call of duty—and look where it had landed him. He couldn't analyse the black anger that flowed through him. "Sam. For the last time—"

"Sorry, Number One. These are my people, now. At least, for the time being. I belong."

"We can fix up prosthetic limbs."

"The Baskers can do more than that. I can have a real body, operating instantly like my old one."

"But you know what happened to them," pleaded Doc.

"I know. But we can lick this. I know it! I've found a place where I belong, where I can receive help and where I can give help. You tell *Saumarez* about it and get Earth's technicians and scientists on the problem. They'll lick it."

Tait wondered just what Doc was thinking, what his friend would think of him now. Pride, sense of duty, wilfulness, had driven Tait into sacrificing a youngster. Samson would stay with the metal-bodied people, trying to help them, trying to decipher the metal-

regrowth principle, until *Saumarez* sent her technicians down; but what sort of life was that?

Tait's actions were perfectly explicable in the light of duty to the Corps; when Jefferies came round there would be no trouble there. *Saumarez* would see to that. What had been found on Baskerville was important to all Earth and her starry dominions, and *Gladius* and her men would return as heroes.

"Very well, Sam," Tait said heavily. "We'll leave you with your new friends. I'm—I'm sorry for it all, son. Good luck."

"You don't have to condemn yourself, or try to justify yourself, Number One." Samson's voice was even and cool. "This is right for me. This is for the best. I know."

Commander Loftus Tait pressed his hand across his mouth, quickly, furtively. "We'll be seeing you, Sam." His voice rang, hard, purposeful, demanding implicit and unquestioning obedience. "Ready the ship. We lift off in thirty minutes."

No one seemed to notice the slight inaccuracy of the automatic response: "Wilco, skipper."

KENNETH BULMER

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# The Eyes of Silence

*He was used to the greatest loneliness to be found on Earth—in space it was another matter, however*

*Illustrated by Arthur Thomson*

The cell was ten feet long, eight feet high and six wide. It held the bare essentials for sleeping, washing and sanitation. The walls were coated with a spongy green plastic, almost indestructable, seamless and soundproof. The single light came from behind a transparent panel in the ceiling. The door was a sheet of one-way glass perforated with countless tiny holes for ventilation. There was no window. It was a modern version of a medieval oubliette.

Ward Hammond had lived in it for two years.

He lay back on the cot and stared up at the ceiling. A big man, pale from long confinement, his muscles wasted, his skin soft. He wore a loose shirt and slacks of a drab grey with soft slippers of the same colour. He had no belt, no tie, no underwear. The clothing was made of paper and was renewed every ten days. It tore easily and had so little mechanical strength that a rope made from it broke at the slightest strain. Suicide was actively discouraged.

Insanity was not.

It was easy to go insane when locked in a narrow cell twenty-four hours a day. It was easy because there was nothing else to do. Society, after other experiments had failed, had come to the conclusion that people were sent to prison to be punished and that, as long as actual physical hardship was avoided, the punishment was justified. So, for the prisoners, the world ceased to exist. Everything ceased to exist but the narrow confines of their cells, the constant light, the constant loneliness. Madness, to them, was escape. Literal escape.

A whisper of sound came from the corridor and Ward tensed, twisting on the cot so as to bring his ear tight against the perforated door. From the cell to his right came a faint mumbling, from the one to his left nothing but silence. That wasn't so strange; little sound escaped the cells and a man could scream his throat raw and be heard only faintly by his immediate neighbours. The watch-guard listening

over the spy-mikes in each cell, on the other hand, could hear everything clearly.

The whisper of sound came closer, magnified by a trick of acoustics, different from the soft-footed tread of the dispenser at mealtimes or the deliberately erratic watch-patrols. These sounds were made by hard shoes. Ward sat upright as the sounds halted at his door. He smiled as the panel slid aside and two men entered the cell.

"More tests?" Ward moved along the cot, making room if the others wished to sit. One of them was a guard, a quiet man with a thoughtful face and a uniform which matched the green plastic of the walls. He held a gas gun which he kept pointed towards Ward. The other man was a civilian. He wore a dark business suit and carried a folder of papers beneath his arm. He did not look like a psychologist, but appearances meant nothing.

"No tests. At least, not in the way you're thinking." The civilian smiled as he sat on the edge of the cot. "My name is Fromach."

"You know mine," said Ward. He glanced towards the guard, standing just inside the locked door, his gun at the ready. His companion couldn't be seen but Ward knew that he would be standing just outside. It was the old, familiar pattern, one guard inside ready to release a cloud of stunning gas if Ward made an aggressive move, the other to watch from absolute safety. There could be no escapes from the prison.

"Ward Hammond, engineer, sentenced to a term of seven years' imprisonment for a non-violent crime," said Fromach easily. "Correct?"

"You know it is." Ward looked at Fromach. "What's all this about?"

"You have served two of your seven years," said Fromach, reading from his papers. "During that time you have proved a model prisoner, showing a high stability index and an intelligent acceptance of your environment here." He lifted his head, smiling. "In other words you haven't flown into violent rages, tried to commit suicide, beat down the walls or anything equally stupid."

"Would it have done me any good if I had?"

"None at all."

"That's what I thought," said Ward. He leaned back against the wall, enjoying the company, the sound of another voice, the feel of conversation on his lips and tongue. "Acting up is the quickest way to get certified for lobotomy."



"And automatic release," reminded Fromach. "Don't forget that."

"I came into this place a man," said Ward tightly. "I intend leaving the same way, not as a brain-slashed zombi."

"A lobotomized prisoner is deemed no longer to be the individual who committed the crime for which he was sentenced," said Fromach. "You could volunteer for it."

"No." Ward was curt. "And they can't do it to me unless I'm judged insane by two doctors. Even a prisoner has some rights."

"They will be respected," said Fromach. "You can stay in this cell for another five years and, if you remain sane, you will not be touched." He wet his lips with the tip of his tongue. "If you remain sane."

"I will," said Ward.

"I wonder?" Fromach looked at the cell, at the green walls and opaque door. He prodded the mattress, solidly constructed as an integral part of the immovable bed. The sanitation arrangements did not trap water, and shaving was done by a non-poisonous cream which removed hair and stunned to follicles for several days. Ward guessed his thoughts.

"Suicide is a symptom of insanity. That's out too."

"Over fifty per cent of all long-term prisoners eventually attempt suicide," said Fromach casually. "Some of the methods employed are very ingenious. None are successful."

"So?"

"So what makes you think that you are different from other men?" Fromach stared at the prisoner. "Five years is a long time, Ward, a very long time."

"I like my own company," said Ward. He looked at the guard, then back at Fromach. "What are you trying to do, upset me?"

"No." Fromach busied himself with his papers. "I'm here to offer you a choice, Ward. You can stay in this cell for the remainder of your term." He smiled. "Or you can leave here within ten days."

"Leave!" Ward stared his disbelief. "Is this your idea of a joke?"

"It is no joke," said Fromach, and now he was no longer smiling. "I'm perfectly serious. If you wish you can leave this cell and this prison within ten days. The choice is yours."

"If I wish!" Ward shook his head, wondering that there could be any doubt. Then he caught on. "All right," he said flatly. "What's the catch?"

Fromach told him.

The spaceship cabin was, if anything, worse than the cell, but Ward didn't mind. He lay on the bunk and stared at the curved segment of the hull beyond his feet and listened to all the little, man-made sounds which filtered through to him from the other parts of the ship. Footsteps, the muted hum of conversation, a cough. Mingled with the man-made sounds were others—mechanical clickings, the soft purr of the air-conditioners, the almost inaudible vibration of the engines.

The door clicked open and Fromach entered the cabin. He locked the door behind him, smiling apologetically at Ward.

"Sorry, but you are still a prisoner and the regulations have to be obeyed."

"You'll have to start trusting me soon," reminded Ward. "Why not now?"

"I know," said Fromach. "There's no logic in it, but when has officialdom ever been logical?" He sat on the edge of the bunk.

"No regrets." Ward stared at the metal hull. "Some questions, though."

“Yes?”

“You explained why I was chosen,” said Ward. “I’ve lived for two years in solitary confinement and remained sane. That’s the sort of test you couldn’t give to normal volunteers. But why not use more than one man at a station?”

“Two men are out,” said Fromach. “The psychological tension would be too great and they’d be murdering each other before the first year. Three men are better but the tension still exists. Two of them would gang up on the third, or one of them would think that the other two were against him—it comes to the same thing. Four men? Five? Seven? Seven might work but then we hit the supply factor. Seven men require seven times the amount of food, water and air needed for one. The watch-stations aren’t big and such supplies are out of the question.”

“Is that the only reason?”

“No.” Fromach stared directly at Ward. “There are two other reasons. One is that it costs a lot of money to staff a watch-station. A man expects to finish his five-year term rich. So the pay has to be high to attract volunteers and even then they demand a satisfactory contract. Free medical attention, free entertainment, free this and free that. And if they break, as they always do, we still have to pay for the full term.”

“I see.” Ward smiled as he thought about it. “And you said that officialdom wasn’t logical. What could be more logical than offering a prisoner the chance to work out his term on a watch-station? No arguments about pay, no extreme demands, no trouble about finding volunteers. Simply the offer to exchange a cell on Earth for a larger one somewhere in space or on one of the satellites. Simple.”

“Not so simple,” said Fromach. “We have to choose the right man, someone with some basic understanding of engineering and electronics, someone who has been sentenced for a non-violent crime, someone who has proved that he can stand being on his own for a long period and who still has many years to go before obtaining his freedom. There aren’t many of them.”

“I should have asked for more money,” said Ward. He stretched. “A credit a day isn’t much.”

“A hundredth of what a normal volunteer would expect,” admitted Fromach. “But better than nothing.”

“Better than I was getting,” said Ward. He frowned up at the ceiling. “What happens to the volunteers when they break? They do break, don’t they?”

“Yes”

"All the time?"

"Yes." Fromach didn't seem to want to talk about it. "The average volunteer lasts two years or less. We pick them up, provide a relief, and fetch them back for treatment."

"What sort of treatment? Lobotomy?"

"No. Lobotomy can only be given with the full consent of the patient or his relatives. Not many give that consent."

"I don't blame them," said Ward feelingly. "I've seen some of those zombis and I'd hate for anyone I knew to become like them." He paused, a small knot of fear gathering in his stomach. "How do I stand on that?"

"You are a prisoner," said Fromach carefully. "The fact that you have chosen to serve your term on a watch-station instead of in a prison makes no difference to your status. If you go insane you will automatically be lobotomized."

"I see." Modern society wasted no pity or false sentiment on its criminals. The answer, obviously, was to remain sane. He smiled at Fromach. "Was that the second reason?"

"What?"

"You said that there were two other reasons for choosing me. You've told me one of them. Have you told me the other?"

"In a way." Fromach rose and unlocked the door. He paused with the panel half-open. "The true reason, of course, contains all the others. Think about it." He left, the door locking behind him. Alone, Ward relaxed as he had learned to do during the past two years. He didn't have to wonder just what Fromach had meant. The logic was too obvious to be missed.

Criminals were expendable.

The watch-station was a laminated dome set on the ice of Callisto. It held instruments connected to the probe-beacons, instruments for cosmiray counting, instruments to measure the variations in orbits of the other eight satellites revolving around the immense bulk of Jupiter. It held instruments to record any and everything which went on in space around it, together with instruments to record the findings on magnetized tape.

It also held living space for one man.

The operation of the watch-station was almost wholly automatic, the human element only being necessary to guard against minor breakdowns and the remote possibility of anything going seriously wrong. Fromach explained it before he left.

"We've watch-stations like this scattered over the entire Solar

System. We've got them on every satellite, many of the asteroids and even in free-orbit. They do nothing but collect data, lots of data, and we come on regular schedule to collect the filled tapes."

"How regular?"

"About once a year, maybe not for two years, it doesn't matter."

"Not to the machines, it doesn't," agreed Ward. "But what about me?"

"Your job is to keep watch on the machines. See that the pile isn't acting up, or the probe-beacons or the recording instruments. Your main job will be general maintenance."

"Janitor's work," said Ward. He was disappointed. "Is that all?"

"It's enough." Fromach held out his hand. "Well, goodbye Ward."

"I'll be seeing you." Ward gripped the proffered hand. "Couple more questions. Any radio?"

"Only local. The static is too bad for any distance." Fromach was impatient to get away. "Anything else?"

"One more thing. What do you do with all this data you're collecting?"

"We feed it to a big computor back on Earth. One day, if we get enough data, we'll be able to find out everything about the place where we live." Fromach waved, stepped to the exit port, was gone. Minutes later the ship left too.

Ward was alone.

He didn't let it worry him. There was too much to occupy him for that. He checked the instruments and found the manuals. He fixed himself some food from the stores and brewed some coffee. He found a small library of tattered books, some magnetic, three-dimensional jigsaws and some other assorted items collected over the years by previous attendants who had had their own ideas of how to relieve the monotony.

He chuckled at the assortment. None of the previous attendants had had his experience. Two years in a small cell without company, books or recreation of any kind had made him indifferent to toys. To Ward, five years in this place promised to be a snap.

At first the time passed easily enough. He checked everything there was to be checked, read everything there was to be read, played with the three-dimensional jigsaws and other toys, and sampled various combinations of food from the storerooms. He even tried to regain his lost fitness with a series of self-invented exercises. He didn't succeed. The confined quarters and the lack of equipment

reduced his activities to a programme of bends, push-ups and muscular tension, valuable back home but here because of the low gravity, almost useless.

The first shock came when he tried to make a closer examination of the installations.

There were no tools in the entire station. There was nothing with which he could strip the panelling, dismantle the machines and get at the wiring. No means by which he could effect repairs if they ever became necessary. He searched three times, moving everything moveable and opening every cabinet and locker he could find; but the results were the same. No tools. He sat down to think about it.

Fromach had lied. Perhaps not all the way but certainly some of it. A watch-station attendant was supposed to be able to maintain the station in case of breakdown, and no one could do that without the use of tools. There were no tools, so . . .

Ward smiled as he guessed the reason. The previous attendant had gone off the beam. He had been dumped in a hurry without any apparent check being made of the station. Perhaps the previous attendant had disposed of the tools in some way, thrown them outside or something. He could have done it as a last gesture of sanity, to prevent himself from wrecking the installations.

It was a logical explanation, very logical, only it wasn't correct. There was no way to leave the station.

That was the second shock, and Ward thought about it on and off during the next few months. The air lock was sealed and could not be opened from the inside. There was no suit, no window, and the sanitation arrangements were incapable of passing anything hard and large. It was a problem among other problems, and every now and again he took it out, let his mind worry it, then put it away again. What concerned him most was the passage of time.

Fromach had said that the relief ship called about once a year, maybe once every two years. There was a calendar clock mounted on the main panel, and Ward took to staring at it, wishing that the hands would revolve faster. Finally, recognizing the danger, he covered the dial with a wrapping from a food carton and tried to forget that it existed. His training helped there. Time is a variable; it passes quickly or slowly depending on the circumstances and the individual. Anticipate and it passes slowly; forget and it speeds up. Two years in a modernoubliette without clocks, calendars or sunlight had taught him to forget time.

But forgetting time, unanswerable problems, questions of motive and the previous attendants left a void. It was filled with loneliness.

Real loneliness. Utter loneliness. A loneliness unknown anywhere on Earth. For no matter where a man may be on his home planet he is never really alone. Always, around him, there is life, familiar, understandable life. A lighthouse keeper is not alone, not when he can signal for help, listen to voices on the radio, keep pets. A prisoner, even in an oubliette, is not really alone, not when his every word is caught and listened to, not when patrolling guards pace the corridors and he can gain company by yelling for it.

A man, alone in a room, is not truly alone when he is surrounded by other people in the same house. But a man on a sterile world, millions of miles away from any other form of life, utterly divorced from his own kind, is really alone.

And Ward had never been truly alone before.

It began to worry him. He began to visualize every result of every circumstance. He could trip and break a bone, fall ill, need medical attention. The food could go bad, the water stale; the power could fail. The dome could spring a leak, the ice on which it was built begin to melt, the satellite even fall from orbit towards Jupiter.

And no one could help him.

It was an uncomfortable sensation and he fought against it. He busied himself about the station, dusting, polishing, looking at the rows of signal lights on the main panel. He even tested the radio again, receiving, as before, nothing but a surging wash of static. He listened to it for a while, then switched off, his skin goose-pimpling to the utter emptiness of the sound. There was nothing remotely human about it, nothing warm and familiar, just the sea-sound of empty space, of radiating atoms, planetary fields and cold emptiness.

Time passed. He ate when he was hungry, washed when he was dirty, slept when he was able. And all the time the terrible sense of loneliness increased so that he wanted to run, to scream, to escape. The previous attendants must have felt like that. They had wanted to escape too, and they had done it in the only way they could. He could follow their example.

But if he did, the results, for him, would be far worse than for the others. Automatic lobotomy and a loss of his individuality. Living death.

Ward gritted his teeth and fought even harder. He filled his time with endless repetitions of routine tasks, stacking and restacking the food cartons, polishing and repolishing until his arm ached.

And then he began to get the impression that he was being watched.

The storeroom was ten feet long, eight feet high and six wide. It normally contained enough concentrates to last a man for a long time. Now the cartons were stacked in an untidy heap outside the closed door. Fromach stared at them, then at the doctor by his side.

"Ready?"

"Ready," said the doctor. He lifted his hypo-gun and touched the button. A thin spray darkened the air—drugs expelled so fast that they would penetrate thin clothing and skin without pain.

"Let's get it over." Fromach opened the door and stepped into the room, the doctor at his heels.

Ward sat up and smiled at them.

"You took your time," he said. "I expected you days ago."

"We had to come a long way," said Fromach absently. He stared at Ward as if unable to believe his eyes. "We didn't expect to find you like this."

"You thought that I'd gone insane." Ward sat up and moved along the cot to make room for the others. He had transferred it from the sleeping quarters into the cleared out storeroom. "Well, I almost did." He shivered at recent memories.

"I can't understand it," said the doctor. He looked a little foolish with the unwanted hypo-gun in his hand. He slipped it into a pocket. "I expected to find you in catatonia."

"Like the others?" Ward shrugged. "You almost did—but my training," he smiled at the replica of his cell, "and the threat of lobotomy saved me." He lost his smile. "Even at that the temptation to escape in the only way possible, back into childhood, was almost irresistible."

"You fought it," said the doctor. "Incredible!"

"You knew," said Fromach suddenly.

"No."

"But?"

"But I know now," said Ward. He stretched, relishing the company, the nearness of the others. "Living in a cell can do peculiar things," he said. "You get so that you can sense more than others. I could always tell for instance, when someone was at the spy-mike. I don't know how or why, I just did. Maybe, when you've nothing else to do, your senses tend to become more acute."

"Tell me about it," said the doctor. "What is it that drives men insane out here?"

"Loneliness."

"Just that?"

"Just that," Ward stared into distance, "It gets you after a time. I can't describe it—no one who hasn't experienced it can imagine it—but it's like being the last man left alive in the entire universe. The last living thing left. Few men can live with themselves, fewer have to; and when the loneliness hits them they can't take it. They want to run, to escape, to hide themselves from themselves. You know what happens then."

"How did you find out?" said Fromach. He was more interested in his own failure.

"The lack of tools gave me a clue," said Ward. "I gussed then that I was here for some other reason than maintaining the station. Then there were other things—the seeming lack of any logic behind it all, things like that. And then I felt that I was being watched."

"The spy-eyes," said Fromach. "But they are soundless."

"I sensed them," said Ward. "I told you that, after a period of isolation, a man gets to sense things. I was lucky—I'd learned to live with myself—but what about the others? They were alone, they knew it, and yet they sensed something watching them. To me that seems just the kind of conflict that would tear a man apart."

"And then?"

"I guessed the set-up. This is a watch-station, sure, but not in the way you said. It's designed to watch the man inside, not events outside. It's a training cell for—what?"

"For what it should be but isn't," said Fromach bitterly. "For the ships we hope one day to send beyond where we are. And more than that. Men must learn to live with themselves if they are to live at all. We're out of the nest now, out of the cradle. It's time we discovered how to grow up."

"You can't change people," said Ward slowly. "I survived because I had the sense to retreat to an environment to which I'd grown accustomed. Others retreat back into the womb." He looked at his hands. "What happens now?"

"You're free," said Fromach. "Special reduction of sentence for unusual duties."

"Thanks."

"You've earned it," said Fromach.

"And the problem?"

"We'll solve it," said Fromach. "We'll—" He broke off, staring at Ward, suddenly remembering that what a man knew he could teach. Ward had survived where others had failed. If?

"We'll solve it," said Ward. Fromach had his answer.

# Further Outlook

*The aliens were using weather control as a tool to destroy mankind could there be any defence against the elements*

*Illustrated by John J. Greengrass.*

The call signal purred faintly above the vision screen and Stilo flicked a switch. "Frisco Weather Control," he said, automatically. "Oh, hello, Dave, what's the worry? Mermaids? You're not due for a report until sixteen hundred."

The caller did not smile. "What are you boys up to? According to report X29, we're scheduled for clear weather until the 20th. We've got cloud forming here and the gauges are falling so fast they'll need brakes to pull up."

Stilo leaned over and turned up a schedule sheet. "You should be clear, nearest cloud build-up for density irrigation is way up on the 49th parallel." He grinned. "Your eyesight all right, boy?"

The caller scowled. "See for yourself, wise guy."

The screen flickered, appeared to up-end and then Stilo was looking at the sky. Low, type six density, clouds hung over an ocean which was too smooth and too oily looking. "Hold on, there's a slip-up somewhere. I'll call San Diego, maybe there's a counter order." He dialled a number and waited.

"San Diego Weather Control—Oh, hello, Stilo, what do you want to borrow?"

"Skip the cracks. What's this about a density build up over bubble nine?"

"Density build up? Bubble nine should have visibility twelve and sunshine. I've just checked the area schedules myself."

Stilo scowled. "There's something wrong somewhere. I'd better call the super." He flicked a switch. "Mr Edwards, sir, we've got trouble over bubble nine, density build up which isn't scheduled. Could you come up please?"

Edwards was a thin young man with a long pleasant face and a worried expression. He worked hard but took his job too seriously. It was beginning to show. "What's this about bubble nine?"

Stilo explained it to him.

Edwards chewed his lower lip, frowning. "Call all the weather bubbles out there, get the area." He flipped a switch. "Mac? Edwards here. Unscheduled density build-up over bubble nine, turn on dispersal, maybe we can break it up." He took a cigarette out of his pocket and thrust it, unlighted, between his lips. When they'd had unscheduled build-ups before, there'd been more than one. He flipped the switch again. "Central?—Good. Get this, call Melbourne control and see what it's like their side of the Pacific. Call Trondheim and London as well, there could be a similar spot over Atlantic somewhere."

Stilo finished his calls. "Density area two hundred square miles, sir, growing." He rose and pinned black studs to one of the charts. "Sectors seven and eight, density four, wind rising, force three, static check nine—electrical storms."

The communicator purred and he flipped the switch. "Yeah—Edwards speaking."

"Mac here. We can't disperse that mess. I called San Diego to help out and we could have been blowing on our hands for all the good it did."

"Can you get more power?"

"Yes, if you'll give an order to freeze five states to do it."

"My God, that would need Presidential authority."

"I thought it might but that's the situation. I can't even find a build-up this size in the records. What's the cause?"

Edwards said; "I wish to God I knew," and broke contact.

Reports began to come in from central. London and Trondheim reported a similar spot in the North Atlantic. Melbourne had

nothing but Christchurch, New Zealand, was getting crazy gauge readings which had their people running equipment tests every half hour.

Bubble nine reported again. "You sure you're not doing this for a video show? Oh, sorry, Mr Edwards, I thought only Stilo was there."

"That's all right, Peter. What are your readings now?"

"Static nine, wind force six—rising, seas four, density fourteen."

"Density fourteen!"

"Yes, Sir. I've checked the equipment twice—density fourteen."

He grinned uncertainly. "The glass has fallen so low I have to look down at it."

"I'll call you back in ten minutes." Edwards broke contact, crossed to the desk and ran his finger down a row of numbers on a pad. He was not a fool, he knew this was something a little bigger than he was used to handling. He made eight calls before he located the controller.

"Hi, Ted." Breen was in his shirt sleeves and his hair was untidy. An over-smearing of lipstick on the large friendly mouth was clearly visible in the screen.

"I'm sorry, Mr Breen, we've got a class nine unscheduled build-up."

He made his voice sound purposely detached.

Breen grinned. "Is that what's making you sound so damned reprobating? Okay, I'll be with you in five minutes."

A woman's voice said: "But, honey, you just got here."

Edwards had a quick glimpse of a strikingly beautiful dark haired young woman who was certainly not dressed for the street before the screen faded. He found himself with grudging resentment of Breen who boasted that he worked damned hard and played harder. But, thought Edwards savagely, he was damned lucky with his playthings. He wished he had the tele numbers of toys like that. The worst of it was, he liked Breen, he was big, tough, friendly and he knew his job. I'm getting old thought Edwards, old before my time and married to a weather bureau. When this business is over there'll be some changes around here. Curious how an emergency jolted you out of the rut and made you think.

"Christchurch calling 'Frisco," said central exchange.

"I'll take it." He flicked the switch. "Hello, Christchurch. Frisco here, the super speaking."

The face in the screen was pale. "We've got all hell over here, we've had to release two bubbles. Thought we'd better let you know as you called a while back."

"What type mess are you getting?"

"No mess, just a hundred square miles of wind and you should see it. It's way out yet but coming our way. Candidly we're worried."

"Cyclonic?"

The face in the screen scowled. "We haven't thought out a name for it yet. Weather like this just doesn't happen, twisters are running all over the ocean like crazy ballet dancers. We're sending out alarms every three minutes to shipping and diverting aircraft."

Edwards nodded. "I'll notify our emergency relief squadrons, give us a priority call if you need help."

"Thanks, that's a comfort. If this thing hits the coast we're going to have casualties and a lot of damage."

Edwards nodded again. "Good luck, New Zealand, keep in touch."

He turned away from the screen feeling a tightness in his stomach. He was trying to imagine what the ocean looked like covered in waterspouts. He knew what a tornado twister looked like from films at training college but, of course, those things had only occurred before weather control. Almost, he laughed bitterly, from reports to hand, the Bureau of Weather Control was an obsolete office. At the moment all the bureaux were doing was calling each other up and saying how bad the weather was, 'control' was non-existent. It was like the bad old days when everyone said, "you can't depend on the weather."

"You've handled things well, Ted." It was Breen who had come in unnoticed and made a quick study of the reports.

"There isn't much to handle. It's like trying to stop a rocket ferry by holding your hand up."

"Nevertheless you could have panicked." Breen patted his shoulder. "The guy at San Diego got the screaming meemies, blew out his projection units trying to disperse it."

Edwards felt a sudden warmth. Breen was sparing in his praise but when he gave it, he was sincere. The warmth was lost in a sudden sense of urgency. "I've got to call bubble nine again, it's getting rough out there."

The chief operator of bubble nine looked pale and his lip was cut. "We're getting impact, weather has closed down and visibility is about forty feet—when the waves let you see that far."

Breen came over. "Hello, Pete, give me your readings."

The operator gave them briefly. "I have never seen density build up this fast, Sir, it's—it's uncanny."

"Sure, sure." Breen nodded, comfortingly. "What impact are you getting, boy?"

"Impact five, seas eight, Sir."

Breen nodded. "If you get a seven impact, boy, break contact and roll, Don't wait for orders, give a notifying signal and roll away, all right?"

Edwards turned away. Things were bad in a bubble when you had to break contact but it was the only safe procedure. The weather bubbles would take wave impact up to force nine, after that instruments fractured, equipment shook loose and communications became impossible. Force ten might break a bubble and that would be the end.

Edwards tried to imagine what it would feel like when the magno-beam, which anchored the bubble to the ocean bed, was switched off. He didn't think it would be very pleasant. The crews would take knock-out tablets, strap themselves in the plasto-foam bunks and sleep it out, but even then their dreams would be far from sweet. The bubbles, no longer anchored, would be at the complete mercy of wave and wind, a transparent ball tossed from wave top to wave top. A ball which rolled over and over and might be thrown high in the air by the mounting seas. He hoped, for the sake of the three man crews, the knock-out tablets lasted until the weather bettered.

Breen was at the central exchange panel now, calm but apparently handling a dozen things at once. "Get me the Chief of Police—Call coastal look out—" He glanced at his watch and ran his finger along the lines of the orbital chart. "The space station will be due for contact in nine minutes, call them, I want a word personally with the Commander—Hello, Chief of Police? Breen here. Weather Control. We've got a load of soup coming in from the Pacific, will you alert responsible people, precinct stations, fire chiefs and so on. Eh?—Would I be telling you if we could control it?—Yes, I'm calling Newscasts now." He broke contact. "Damn fool," he said irritably. "Ted, call Newscasts and give them an outline of the position, will you. Don't play it down, pile it on or we'll have casualties. Tell them a density fifteen cyclonic storm is due to hit the coast in about five hours. Ask them to notify all townships between here and San Diego and if they want to know if we can control it the answer is 'no'." He began to remove his coat. "You

know, Ted, that kid was right, it's uncanny, weather like this just doesn't happen."

"Radar space beam," said the speaker on the Central panel. "Radar space beam calling Mr Breen."

Breen almost punched the switch. "Yeah, Breen here."

The face of the elderly man at Radar beam looked sweaty and frightened. "We're trying to contact the space station, sir, but so far we can't get a thing. The beam is so lousy with static we don't know if we're getting through or not, even the screens are so fouled with interference they look like pin wheels."

Breen straightened slowly. "Thanks, Radar Beam, not much left to say, is there?"

"If I can make contact before they go over the rim I'll call you back, Sir."

"Thanks, do that." Breen cut contact and turned, his face grim. "Ted, send out a general warning to every weather bureau on the planet." He leaned forward and snapped a switch. "Get me Security Headquarters, Washington—"

Whatever type rocket motors Security used they were faster than anything Edwards knew about. The agent made the journey from Washington to San Francisco in thirty minutes, flat, and that included the journey from the rocket port. He was a small, lithe man with black eyes, quick movements and a clipped way of speaking "I'm Nixon, Security. I'm looking for Mr. Breen."

"I'm Breen. What can I do for you?"

"Not much until I've looked around. I don't suppose you expected a personal visit but the trouble started over one of your bubbles so we'll begin here. Fetch the man who was in charge when it began."

Edwards was called and explained what had happened as briefly as possible. "You understand weather control, Mr Nixon?"

"I should do, I spent four years supering like you before joining Security. I've often wondered if the change was wise but not now." He frowned briefly at the charts. "No, not now." He crossed to the central map and examined it thoughtfully. "I recommend we ground all aircraft in this area." He made a wide circle on the map with his finger.

Edwards paled. "All aircraft? But that would paralyse transport in three states. I don't have the authority to do it."

"You have now, that's why I'm here. Get me Washington on that thing—"

Edwards obeyed dazedly. Nixon had a lot of authority, of course, but he acted as if the houses were going to blow away. Edwards glanced uneasily at the mounting density figures on the bureau indicator— Maybe they were.

He punched the switch of an outside vision screen, glanced at the sky and switched it off again hastily. The sky was still clear but he didn't like the colour. It was brazen, heavy and copper-coloured.

Someone came in from Central exchange and left the door partly open. The voices of the operators reached him clearly:—

“London, here. We're getting violent electrical storms and torrential rain—”

“Melbourne is erecting storm screens—”

“S.S. *Miriam*, can you hear me, answer please. Your distress signals received and acknowledged—over—”

He walked out. He had an uncomfortable feeling that if he listened any longer he would get the shakes. This was something he couldn't understand. Weather control had been in effective operation for twenty-seven years and black spots had always been overcome. This was like seeing a smooth efficient machine suddenly blow its fuses and begin to race, out of control, and machines out of control could blow up, couldn't they? Edwards felt sweat begin to break out on his forehead. “God,” he said half to himself, “I'm scared.” As if to prove it untrue he took another look outside. The sky still had a copperish tinge but had darkened to a greenish black towards the horizon. Low white clouds were beginning to stream in from the sea almost touching the tops of the highest buildings. He cut the screen hastily. Weather just couldn't deteriorate that fast, or could it? He returned to the control room, determinedly averting his eyes from the density meters. He'd seen enough.

Breen came over, his tie was askew and there was sweat on his face. “We've lost contact with Arctic Two.”

“All contact?” Edwards felt stupid and reflected briefly that he probably looked it. “You mean the screens have failed?”

“Every communication has failed, the whole damn world is so lousy with static that it's fouling communication everywhere.” Breen put a cigar in his mouth and began to chew it absently. “Things are dangerous, very dangerous.” He looked quickly at the other and away again. “The situation calls for emergency measures, on-the-spot action if you understand me.”

“You want something.” Edwards made the statement flatly and without triumph.

"Yes. I can't order you, this a strictly volunteer job, but you're the only one among us with a health licence permitting you to take a ten Gee blast-off."

"A rocket job? Haven't you grounded everything?" Edwards felt cold inside.

Breen looked uncomfortable. "Yes, but in an emergency—" He broke off. "You'd better come and see Nixon, he'll explain everything."

Nixon was sitting at Breen's desk frowning at a pile of reports. He looked up as the other entered, smiled briefly and pushed across a box. "Have one of Breen's cigars, he can afford it." He grinned, disarmingly. "You know what I want you for?"

"Some sort of rocket job."

"Correct. I've sent for an army pursuit ship. Someone has to get up above that mess and take a look, someone with enough experience to make a met. report from above."

It sounded easy, too easy. The snag was getting up there. Edwards tried not to think of the meters—wind, force six. Pilots were not enthusiastic about lifting ships in winds above force three. A thrust ship at blast-off was as finely balanced as a trapeze artist on a wire, a slight pressure at the wrong moment—

Edwards swallowed, he thought his face probably had a greenish tinge.

"This is strictly a volunteer job," Nixon was saying, "but you are the only man available with enough met. experience and a licence permitting you to take a ten Gee blast-off."

Edwards nodded. "Will there be room for instruments?"

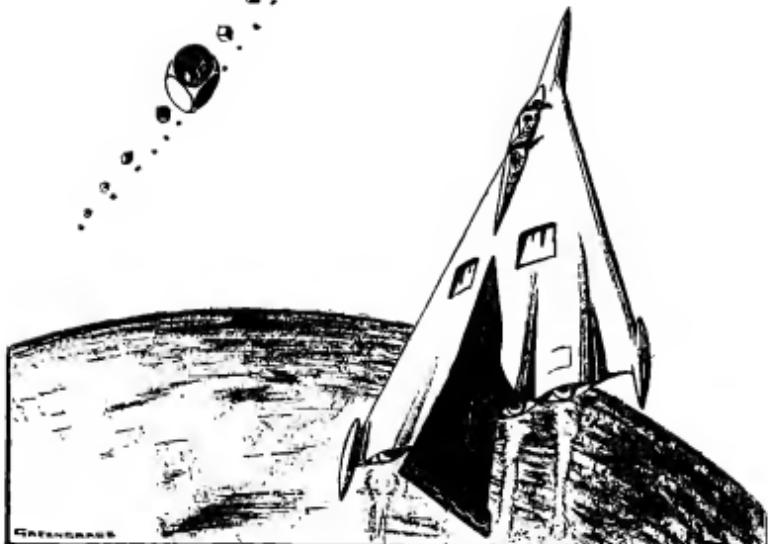
"Yes." Nixon's cigarette flickered as he puffed at it. "Within reason that is. You'll go?"

The other nodded again, made a grimace which he hoped was a smile, then gave up the attempt altogether. "I'm scared," he said, "I'm so scared I can't even think up a sensible excuse for not going."

Nixon smiled. "Moral courage too. I like that. Good luck, Edwards."

The pilot of the pursuit ship looked absurdly young but he radiated confidence. "I've got the ship in a blast cradle, gives her a forty degree blast angle so that we can go into the prevailing wind." He grinned. "Don't worry, a defence force wouldn't be much good if it could only blast-off in good weather."

Edwards nodded and fought his way towards the cradle. The wind was howling among the administration buildings and driving



across the blast aprons with almost frightening force. Above, the coppery sky had vanished, giving way to low racing and thickening cloud—

The blast-off was something which Edwards dreamed about for years, it was well over ten Gee and he felt as if a giant had jumped on him with both feet. The breath rushed from his lungs and he blacked out.

When he regained consciousness, pressure was normal and rapidly lessening. He fumbled for the safety belt, snapped the catch and sat upright groaning.

"Taking her up to orbital point," said the pilot, without turning. "I'll bring her down in slow spirals, give you time to take readings or whatever it is you want to do."

Edwards' finger touched the button below the vision screen. "Well, as a beginning—" He stopped. "My God, look!" His voice cracked. "Above you, over there—"

The pilots shoulders tensed. "God." His voice was croak. "Let's get to hell out of here."

The Weather Control building was crowded when they returned,

crowded with grim faces, tight mouths and worried eyes. Here and there the uniforms of the armed services. One of the uniforms stepped forward. "We got your message, please sit down." The uniform belonged to a General.

A thin faced civilian stepped forward. "If you please, General Staines, if you please." He faced Edwards in the chair. "Now, Mr Edwards, perhaps you will be good enough to repeat what you saw in your own words."

Edwards made a helpless gesture. "There were a number of what looked like space ships."

"How many?"

"I didn't count—there were a lot."

"What made you assume they were space ships?" The civilian's voice was sharp.

Edwards began to feel vaguely uncomfortable. "Well, I—"

"Did they, in any way, resemble our own rocket ships or lunar supply vessels?"

"Well, no, they—

"Then your report was pure assumption, imagination even, they might have been anything, meteors for example."

"I find it difficult," said Edwards, suddenly angry, "to believe in cube-shaped meteors orbiting in tight formation."

The civilian's mouth thinned and he walked quickly behind the chair. For some seconds he did not speak, then he said quietly: "You may get up, Mr Edwards." He turned to the General. "This man is speaking the truth, emotional reflexes are normal, imagination gauges are without fluctuation. You may accept the report at face value."

Edwards realised suddenly that the chair had been wired. It was not a normal chair at all but a psycho-assessor, known in police laboratories as a 'quiz-chair.' These people wanted to make sure of their facts first but above— He glanced at the nearest gauge, outside the wind was blowing steadily at seventy miles an hour with gusts approaching eighty-five.

The General sat down heavily. "The conclusions are obvious, Earth is under attack. The enemy is using his own form of weather control as preliminary to invasion. In this wind, counter-attack is impossible, static is already cutting communications and if they step this business up and land in the middle of it, they'll dominate key positions all over the world before we can mobilise a man to oppose

them. Transport will be another problem too, no airborne reaction, roads flooded, bridges down—God."

An officer stepped forward. "Operation Release, Sir," he suggested.

The General rose and looked at him tiredly. "No, Acton, no."

"No, Sir?" The officer looked pale. "But all those missiles, Sir—"

"Acton." The General's voice was heavy with weariness. "To use a guided missile you must *guide* them. We can't get a guide beam through that muck. We can't use homing missiles either, we can't get a reading for them to home on." He began to pace up and down, hands locked behind his back.

"We could fire a few blind, as a warning, Sir. If we sent enough we might hit something."

The General said savagely: "Yeah, us. Do *you* want the responsibility of firing a missile with a thermo-nuclear warhead into space, blindly, in the hope it will hit something? Supposing it doesn't? Supposing those things up there are smart enough to deflect it back at us?"

A tall civilian said, sharply: "General, we must do *something*; Wind velocity is building up five miles in every hour, outside is the biggest electrical storm in recorded history and rainfall is one and half inches per hour." He waved a sheaf of papers. "Look at these reports, tidal waves, states inundated, floods, transport bogged down, power failures and fatal casualties have passed the thousand mark." He tossed the papers aside angrily. "We must do *something*. While we stand here talking those damned things are defeating us with our own weather."

Edwards sat down suddenly. 'Defeating us with our own weather' the words had somehow started a train of thought. He found an old envelope in his pocket and began to scribble busily on the back. He had soon covered it with a mass of figures but he had an answer, the right answer, but dare they risk it? Would the enemy have thought of it first and equipped himself to handle it? He shook his head, he didn't think even a race which could invade from the far stars could equip themselves to handle a figure like that.

He beckoned to Breen and held up the envelope.

The controller studied the figures, frowning, then he said: "My God," in a thick voice, "energy potential!" He stared at the envelope again. "Wouldn't they have taken care of that?"

"No doubt they have, they probably know just how much to pour in without danger to themselves. I was thinking we might add

to it from our side."

Breen sat down heavily in the chair Edwards had just vacated. "Add to it?" His face was ashen.

Edwards shrugged. "What have we got to lose? If we don't do something we're beaten anyway."

Breen nodded slowly. "I can't make a decision about this myself—Nixon."

Nixon frowned at the envelope, a deep line of concentration between his brows, smoke rising from the inevitable cigarette. "It's one hell of a risk isn't it? We could blow ourselves up high enough to meet them half way." He seemed to come to a decision suddenly. "I'll put this to the General."

General Staines found it difficult to grasp. "We've got all hell out there as it is, what's the point in increasing it? You'll wash us clean off the planet."

Edwards explained patiently: "In weather control you have to conform to recognised laws or you can't control it, ionisation of cloud mass, dispersal beams to pull positive energy out of black spots or boost beams to push it in if you want rain. To build up planet wide density like this the aliens must have been pouring in positive energy for all they're worth."

"So?" The General looked blank.

"In the old days, before weather control," said Edwards, "the tallest buildings were fitted with a device called a lightning conductor. It was there to divert and handle a discharge from a positively charged cloud mass. The alien ships must be fitted with similar, although more complicated devices to handle the energy they've been pouring in, otherwise they can't land. My idea was to start pouring in energy from our own side, build up the potential to such an extent that no possible device could cope with it. When those things come in to land, and they're big enough to get down in muck like this, they'll run into an energy potential that will make an atomic explosion look like a damp match."

The General thrust out his chin. "What's stopping us?"

"This." Breen flicked on the vision screen. The streets were almost invisible in the deluge, street lights, flickering advertisements, stores, were indistinguishable save as watery glows. Everything ran with water, knee deep, ground cars had been tossed by the howling wind into corners and onto sidewalks. As they watched, one was lifted and tossed like a paper bag into the front of a store.

"And this," Breen made swift adjustments. The waters in the bay were churned into unbelievable masses of foam, seventy feet

waves were clawing wharf buildings and wrenching gigantic magnocranes into fantastic wreckages of twisted steel. "To increase the energy potential, we have to increase that." He waved his hand at the screen. "We have to add fuel to the flames."

Colour drained from the General's face, leaving a tracery of tiny purple veins in the heavy cheeks. "I don't have the authority—" His face was twitching. "Some obsolete land cables left, I hear, can you get me Washington? Got to call World Council—"

It took World Council, and a panel of scientists, five hours to come to a decision. Wind velocity by that time was eighty-three miles an hour with gusts up to a hundred and five. Four buildings were down in the city, twenty-nine windows had blown in in the Weather Control building and the known toll of fatal casualties had risen above three thousand.

Edwards sweated. The building shook, a call to the city architects informed him that the structure could take gusts up to a hundred and sixty but he thought they were being optimistic, another twenty would keel them over.

"They're going to try it," shouted Breen suddenly. He flicked a switch. "Mac."

The screen lit. "Yeah?"

"Power," said Breen, "all the power you can get. I want nine hundred on those dials within thirty minutes."

"Nine hundred!" Sweat glistened on the bald head. "We'll blow ourselves to the other side of the Pacific."

"You heard me, nine hundred." He cut contact. "Stilo, get in front of the big screen and keep it tuned, you've no range but try and keep the picture clear."

Stilo sat down and began to make adjustments, muttering to himself. "Range they say, you could see Moon Base with this thing, now all I got is cloud." He ironed out a wavering line of distortion by a swift adjustment of controls. "Take a look at that lightning, just take a look."

They waited. Edwards stood by himself, staring unseeingly at the mess of half smoked cigarettes round his feet. Supposing his figures were wrong, suppose it didn't work. He exhaled noisily, ground the butt under his foot, and lit another. It was no use looking at the meters any more, the needles were hard over. Wind velocity had risen to ninety-five miles an hour with gusts up to a hundred and fifteen.

Time passed and a civilian blew his top. "My God, we can blow ourselves clean off the planet, cut the power, cut the power—" His voice rose hysterically.

Breen hit him. The civilian went backwards over a chair and lay still. Breen sucked his knuckles and turned back to the screen.

Edwards felt like going over and offering his own chin, he was near breaking point himself, yet you had to try something, there was no other way. Somewhere above those clouds were space ships, great black vessels which looked like eighty-story buildings laid end-wise—

"My God." Stilo's voice cracked. "Look at that light."

Far out over the sea the clouds shone with a growing blue-white radiance and enormous fingers of lightning raced towards it.

The screen blew in, glass tinkled about the room, sparks jumped fused circuits and there was a sharp tang of ozone.

Breen switched on the subsidiary screen and they had a confused impression of something huge and incandescent plunging towards the ocean then that screen blew too. The building shook suddenly, an enormous detonation punched at the soles of their feet and battered in the steel shutters over the windows.

"We got one." Stilo's voice was shrill above the noise. "We got one. Blew it right back to the stars."

Fourteen seconds later there was another explosion, this time farther away.

Edwards leaned against the wall, almost intoxicated with reaction and triumph. It had worked, probably this was only the first round but they'd won it and the aliens had been outsmarted. They must have been so damn sure of success that they'd walked right into it. It must have taught them one hell of a lesson. It was an old, old saying surely : "you can never depend on the weather—"

PHILIP E. HIGH

## BACK NUMBERS

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# Artifact

*Were the mounds in the red sands of Mars  
the work of an animal, a Martian or a man?*

*Illustrated by Arthur Thomson*

She came screaming in from the black sky, her wide wings eclipsing the bright stars as she skimmed over the Polar wastes, lower, lower, until her long landing skids touched in a flurry of snow and powdered ice, touched, rebounded, and touched again. From her needle sharp prow there was the brief, blinding flare of braking jets and she slowed abruptly to a halt. Lights came on inside her body, and the slowly settling ice crystals scintillated in the hard radiance from the ports like microscopic diamonds.

After a long while—there were tests to be made, measurements of atmospheric pressure and temperature to be taken—a door in her side opened. A dark figure, bulky in protective clothing, jumped down to the snow, followed by a second, similar figure, and a third, and a fourth. The leader carried a long staff with a pointed ferrule, drove it, with a single, decisive action, deep into the snow. There was enough wind briefly to unfurl the flag at the head of the staff, to flaunt the gaily coloured silk in the beam of the searchlight that had been directed upon it from the ship. The four men stood stiffly to attention, their right hands raised to their foreheads in salute. Then, one by one, they returned to their ship. Silently the door shut behind them. The only sound was the whispering and creaking of metal that, heated almost to incandescence by the flight through the atmosphere, was now cooling.

In the cabin, Dr. John Taylor carefully uncorked the whisky bottle, poured carefully measured doses into each of the six glasses.

“Don’t be so damned finicky, Doc!” shouted Commander

Peters. "We've got here, and we're celebrating—we aren't taking medicine!"

Taylor grinned whitely at his Captain—he, like the other five men was deeply tanned—and went on pouring. Then, as an after-thought, he added two millimetres to the contents of the glass that he handed to Peters.

The Commander took it, handling it appreciatively.

"It's good," he said, "to be able to take a drink like a civilised human being at last. Eight months of sucking fluids out of plastic bulbs is eight months too long!"

He got to his feet. The smile slipped from his face, leaving it stern and hard and, thought the Doctor, dedicated. He raised his glass.

"To the first men on Mars!" he said.

"The first men on Mars!" repeated the others.

Taylor, as did the others, gulped his whisky.

Then—"Are we the first?" he asked quietly.

"Of course!" snapped Peters. "Who could possibly have got here before us?"

"The Russians?" suggested Wesley, the Navigator, dubiously.

"If they had," said the Commander, "we should have known about it."

"Not necessarily," demurred Taylor. "They were always secretive—in their dealings with each other as well as with the outside world. We know that they were pretty close to interplanetary flight twenty years ago—and that was when their top men in the field lost their lives when the atomic powered rocket blew up on take-off. There must have been records destroyed at the same time."

Not speaking, Peters held his glass out to Taylor. Silently, the little Doctor refilled it.

"To the first men on Mars," he said again. "Us."

They slept poorly that night—the weight of their bodies, even in the slight Martian gravity, was irksome after the months of Free Fall. They were up and about before sunrise, unloading and assembling the equipment that they had brought with them. They had already reported their safe landing to the main fleet in its orbit around Mars, now, whilst the others put together the light, incredibly tough tractors the Radio Operator tested the set that he would use to maintain communications during the trek to the Equator.

At noon they were ready to commence their journey southwards.

The two tractors, thought Doctor Taylor as he stood well away from them, taking his photographs, looked like weird insects, looked, with the bulbous, pressurised tents dwarfing the chassis beneath, like the honeypot ants he had once seen in Australia. And the ship herself, with the long skis of her landing gear, looked like some huge grasshopper. He wondered briefly if there were any insects on Mars, if there was any life at all apart from the vegetation of the fertile areas.

"We shall soon find out," he whispered to himself, forgetting that his helmet set was switched on.

"What was that, Doc?" Peters' voice crackled in his earphones.

"I was wondering if there was any life here, Commander," he said, a little embarrassed.

"Of course there is," laughed Peters. "We're it! Hurry up and take your pretty pictures, Doc. We're pushing off, now."

Taylor put the camera back into its case, walked with long strides back to the tractors. He took his place in the leading vehicle, sharing the long seat in the driver's cab with the Commander and the Navigator.

"As near as I can determine, Captain," Wesley was saying, "we made our landing almost exactly at the Pole. The Magnetic Pole can't be far away, so our compasses are practically useless. Too much vertical force, not enough horizontal. . . ."

"Steer for the sun," ordered Peters. "That'll be as near due south as dammit for an hour or so. Keep the ship right astern. I'll keep an eye on your tracks to see that you're keeping a straight course."

"But the azimuth is changing all the time," protested Wesley.

"Steer for the sun," repeated Peters. "We'll have to put some mileage between us and the Magnetic Pole before our compasses will function. As soon as they are some good, check the error—there's bound to be Variation, and maybe some Deviation as well . . ."

"As you say, Commander," replied Wesley.

The note of the turbine rose an octave, the tractor lurched forward. Its motion, over the undulations of the ice cap, was not unlike that of a small craft in a seaway. The glare from the snow was painfully dazzling until Peters adjusted the polarisation of the forward window of the cab.

So they pressed on, taking it in turns to drive. By sunset the compass was less sluggish and a halt was called while Wesley determined the compass error and meals were prepared in the pressurised tents. Two hours after sunset, and they were ploughing through, as much as over, pulverised sand. Taylor had wanted an exploration, even only a brief one, of the edge of the ice cap, reasoning that life

forms might exist there, but Peters was determined to make as good time as possible, to prepare the landing strip at the Equator for the other two rocket planes by the appointed date, if not before.

Through the night they drove on, the beams of their headlights more brilliant than the light of Phobos—they were still too far north for Deimos to show above their horizon. By watches they slept—or tried to sleep—in the pressurised tents, by watches they drove.

It was at dawn that they reached the bank of the canal.

Reluctantly, Peters agreed to a halt.

He was, thought Taylor, in many ways an ideal man for his job. He was not, now that the first thrill of landing had passed, a romantic to enthuse every minute of the day about the wonder and the glory of standing and walking on the surface of another world. He was not one to allow the requirements of scientific research to get in the way of his mission, which was to proceed with all possible despatch to the Equator and there prepare the landing strip for the other rockets. The other ships would bring in the scientists. Peters was not a scientist, neither were his men. They were naval officers, technicians. Of them all, only Taylor and Wesley, the Navigator, showed any desire to stand and stare. Of them all only Taylor, by virtue of his age and rank, could hope to argue with the Commander.

"We've made good time," he said. "We can afford a halt. We can try to discover whether or not these canals are artificial waterways. We can look for ruins . . ."

The Commander consulted with Wesley who, using his bubble sextant, had taken observations. He told Taylor that he would be allowed two hours for his exploration. He said that he, personally, would use that two hours for sleeping, and strongly advised the others to do likewise. Wesley, however, decided to accompany the Doctor.

The two men walked along the canal bank, stopping frequently to stoop to examine the scattered plants that grew there. Spherical they were, most of them, ranging in size from a marble to a basketball, with tough, dark green, leathery skins. Taylor felt vaguely disappointed. He should, he knew, have felt only awe at the evidence of the universality of life—but, as he put it to Wesley, it had been one helluva long way to come just to look at a lot of pumpkins

"And as for the canals," he said, "as far as we can see they're no more than trickles running to the Equator from the Poles. They may look straight from Earth, or the Moon, or from a few millions miles out in space—but they're far from being straight lines when you're standing beside 'em . . ."

"I was expecting a few ruined cities," said Wesley.

"So was I, frankly. Oh, I've no doubt that there *will* be cities here—but only after we build 'em. Oh, well—I'll cut myself a pumpkin or two and find out if they're fit to eat when we get back to the tractors . . ."

South they ran, and south, keeping well to time. At set periods the brief messages crackled from the surface of Mars to the orbiting fleet, at set periods the laconic replies flashed back. Taylor, reading between the lines of scientific colleagues' terse messages, sensed their disappointment. There were deserts a-plenty on Earth—and these deserts could and did maintain a far greater variety of life than did the Martian wastes, beings that crept and ran and jumped and flew. The sands of the Earthly deserts hid the ruins of past civilisations—but it seemed most unlikely that there had ever been a civilisation on Mars. Evolution had produced the highly specialised plants, and then lost interest.

This, thought the Doctor, was rather a pity, for the flesh of pumpkinlike things was fantastically rich in nutriment. It would be possible, he told the Commander, for a man to live indefinitely off the country. It almost seemed, he went on, that Providence had prepared the Red Planet for colonisation by Man. Peters, spitting out an experimental mouthful of the overly tart flesh, spluttered, "Not by *this* man!"

South they ran, their metal tracks rattling over low stony hills, over plains of shingle that might once have been the vast beaches of some long forgotten sea. South they ran, through a forest of tall, columnar plants, brittle, whose branches, shaken by the vibration of their passing, shattered with the crystalline clatter of breaking glass. It was here that both tents were badly torn; until the convoy was clear of the forest, when repairs were made, the men had to live in their suits and helmets.

A day ahead of time they reached the Equator, and Peters steered east until he found what he decided was the best site for a landing strip. It was to the west of one of the canals, and the sand was fine, but not too fine, and there were no buried rocks. Even so, it was necessary to use the earth levelling equipment that they had brought with them, the grader blades that could be fitted to the tractors.

Peters drove his men, and after two days' hard work the strip was ready. Messages were exchanged between the tractors and the ships then, when word was received that the rockets had already entered the atmosphere, the smoke bombs were set off, their long

streamers of white vapour showing the direction of the wind.

The six members of the first landing party stood by their tractors, which had been withdrawn well clear of the landing strip, and scanned the clear sky for the first sight of the ships. They appeared suddenly—mere silvery specks at first, but expanding with almost frightening rapidity to vast, winged shapes. One after the other they swept down, vanishing momentarily, as their skis touched the surface, in clouds of upflung red sand. Then there was the handshaking and the shouted congratulations and, finally, the planning of the campaign for the further exploration of Mars.

Taylor didn't like Grant. He felt, as did all those who had made the first landing, a little superior to those who had come in to the prepared strip on the Equator. He felt that Mars was, by right of first occupancy, his planet—but Grant made it all too clear that he thought that Mars was his. Technically Grant, who was the Biologist of the expedition, was Taylor's superior—and this, too, he made all too clear.

He was excited when he called Taylor into his tent—but he contrived to hide his excitement beneath a mask of maddening superiority.

"You fellows," he said, "came all the way from the Pole to the Equator with your eyes shut."

"We did not," said Taylor.

"But you did, my dear Doctor, you did. You assured me that there was no evidence of the existence of animal life on Mars. As for intelligent life—that, you said, was entirely out of the question."

"There is no evidence," said Taylor dogmatically.

"Isn't there? It may interest you to know, Doctor Taylor, that I have found an artifact . . . ."

"Where is it?" asked Taylor, suddenly excited.

"Come with me," said the Biologist.

The two men put on their helmets, left the pressurised tent. Grant led the way to the canal, then along its bank to a sharp bend. Past this bend there was a patch of damp sand on which, for some as yet inexplicable reason, none of the pumpkin like plants was growing. Save in one spot the surface of the sand was smooth—and there somebody, something had been digging. He—or it—had done more than dig. In a neat row stood six little towers on the sand, six little towers of sand, six little truncated cones.

"Fantastic!" breathed Taylor. He looked around him, almost expecting to see deck chairs, a cockle stall, an ice cream barrow.

He said, "But those aren't necessarily artifacts. There are plenty of worms on Earth that eat mud and sand, passing it through their bodies as all organic matter is extracted . . ."

"I thought of that," said Grant, "but the idea won't hold water. It's a Martian who's done this—an intelligent being letting us know that he's around . . ."

"An intelligent being," argued Taylor, "would have scratched Pythagoras' Theorem on the sand."

"Not necessarily. For all we know these six little sand castles, in a straight line, represent some glaringly obvious mathematical truth—to a Martian, that is . . ."

"Have you told the Commodore yet?" asked Taylor.

"No," said Grant. "I'll tell him when I'm ready."

"In other words," said Taylor, "you'll tell him when you can lead a real, live Martian up to him by the hand and say, 'Please, sir, Commodore Jones, sir, look what I've found, sir!'"

"Cut out all the 'sirs,'" said Grant coldly, "and you've got it. I think it quite disgraceful that men of science should be under the orders of Naval brass hats . . ."

"I'm a naval officer myself," Taylor reminded him.

"I'm sorry, *Surgeon Commander* Taylor. I forgot. But I'm still your boss, even though the Commodore is mine. Anyhow, Doctor—you know these naval types. Don't you agree that if they do find out that there's a Martian in the vicinity there's liable to be all sorts of warlike activity that'll do more harm than good?"

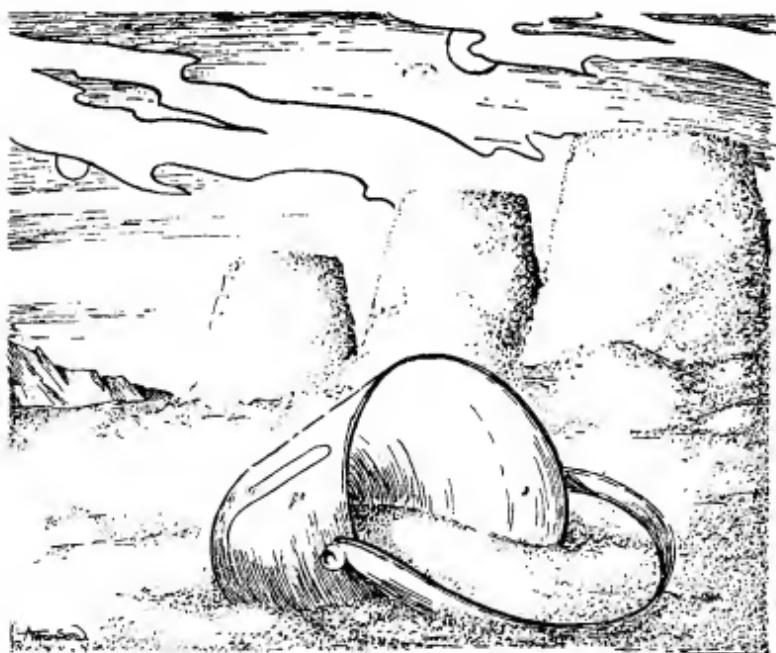
"All right," said Taylor, after a long pause. "We keep it dark for the time being—just our own little secret. What then?"

"Tracks," said Grant. "You can see that something has walked over the sand. A biped, I'd say, with big feet like a camel's. Unluckily it went over that patch of bare rock, and beyond that there're the stony hills and that warren of canyons . . ."

Taylor stared at the little mounds, already crumbling as the dry air sucked the moisture from them.

"These couldn't have been made so long ago," he said. "What's your guess?"

"About an hour after the morning thaw," said Grant. "Say about 0930 Local Time. Now, here's what I propose doing. We get shovels from the camp, and a sheet of aluminium—they've already started dismantling the wings of the ships, ready for blasting off. (why the hurry, God knows!) We dig a trench, roof it over with the metal sheet, cover the aluminium with sand. We'll leave peepholes for ourselves, of course . . ."



"And when are we doing all this?"

"Now. But we'll come to the hide first thing tomorrow morning, before sunrise. You'll see that the sand is levelled off smoothly, and then leave me to keep a watch . . ."

"I'll do nothing of the kind," said Taylor. "I shall be in the hide with you. Oh, it's all right—I think I'll be able to get somebody to cover us up and keep his mouth shut. Wesley—he was our Navigator on the run south . . ."

The most awkward part of the construction of the hide was the "borrowing" of the aluminium sheets. This was accomplished when all members of the expedition were at their midday meal. Digging the trench took very little time; the excavated sand was thrown into the shallow water of the canal.

Taylor, rather to his surprise, slept soundly that night. He was able to awaken at any time without being called, and on this morning the gift stood him in good stead. He went first to the pressurised tent where Grant slept alone, shook the biologist into wakefulness. He then went to the tent that Wesley shared with three other junior officers, all of whom, luckily, were sound sleepers.

The sun—small and weak it seemed—rose as the three men .

reached the hide. They brushed the sand from the aluminium sheets, lifted them, and then Taylor and Grant clambered into the trench. Wesley replaced the sheets. Faintly through their helmets they could hear the scraping sound as he respread the sand. He rapped sharply with his heel three times to indicate that he was going.

Neither Taylor nor Grant had his helmet radio switched on; they talked by bringing their helmets into contact with each other. They did not have much to say to each other. They both stared through the observation holes, watching for the Martian to appear from the hills, to leave his message on the sand.

He came at last—a tall, shambling figure, humanoid.

Humanoid? thought Taylor. Humanoid?

Feet and body were wrapped in layer upon layer of shapeless rags—but on the shoulders there was the dull gleam of metal braid, of epaulettes. The face was dark brown where it was not covered by a thick, black beard. The black hair hung down to the being's waist.

It—he?—squatted on the smooth sand. Working with silent concentration it filled the little, bucket shaped container it was carrying with the moist grains, patted them tight, up-ended it.

“But it's . . .” Taylor began to whisper.

The Martian—even though the words were spoken inside the helmet of a spacesuit—heard the sound and took alarm. In a second he was gone, loping over the rocks, vanishing among the canyons of the hills.

Taylor and Grant came out from the hide.

Taylor picked up the little “pail” that the Martian had dropped. A food container it must have been. He pointed to the characters, faded but still visible, on the dented metal.

“There'll be a wreck in the hills,” he said. “A spaceship. It'll have a hammer and sickle painted on the bows, or the tail fins. . . .”

“And it's not a Martian at all,” whispered Grant. “Just a survivor, a crazy survivor . . .”

“No,” said Taylor. “A Martian. Perhaps *the* Martian. That Russian ship had a mixed crew, you know. A child born here, brought up here, could, conceivably, manage to get along without a spacesuit, a helmet (If only Lysenko were alive to see this!) You've found your Martian . . .”

And what of the mother of a race? he wondered. What of the woman who, clinging desperately to memories of a childhood spent on the shores of the Baltic or the Black Sea, had taught her son how to make castles in the sands of Mars?

# In the Beginning

*He was a native of this deadly planet so the aliens from Earth were bound to be his enemies*

*Illustrated by John J. Greengrass*

Sam was running; he had always wanted to run, not like on the treadmill in his room that went around and around without going anywhere, but really run, and not be stopped by walls or barriers, either.

A barrier was a thing that didn't look like a wall, a thing you could see through, but a thing that, if you explored with your hands, if you felt, was just like a wall. There was—had been—a big barrier in his room. One whole side of his room had been a barrier. He had picked up the heavy table and thrown it against the barrier. He had thrown it hard, really hard, because the barrier was very strong. But he was strong, too, stronger than the barrier, and he had broken through it.

For his first dozen awkward strides he had thought he might run into another barrier; so he had pulled the table after him, but when he didn't run into one, he dropped the table and ran faster and faster, his heart growing in his body as he felt the air hitting on his face.

He ran fast, fast as he knew he would be able to run if he ever tried, faster than they thought, and he was stronger than they thought, and he had kept that to himself, so they never thought he could break the barrier.

There was a small rise of ground between him and the Dome now, and he felt better. He was free and they would never find him,

because he wouldn't let them find him. If he saw one of them coming after him, he would run and run—

Or—

He smiled to himself. He was stronger than they thought he was, because they never thought he could break the barrier, and if he saw one of them coming toward him, one of them inside of a black, shiny thing, he would—he would—

He didn't want to think. Not now. He wanted to run.

There was a dark patch ahead of him, the big dark patch. He knew that he could go into it like he had seen things that moved do.

(Some things moved, and they were the things that were alive like he was alive, and the things that didn't move, they were the things that were not-alive.) He had seen alive things, big, pretty alive things, move in and out of the woods, so he knew that he could go in, and he knew that it would hide him.

Often he had looked out from behind his barrier and felt it call to him, that dark patch, call to him in a silent voice that made his blood tingle, call to him, say, "You belong here," say, "This is your home, your place is here, away from them."

He used his hands to help him run, and it made him run faster.

Squat, insect-like he was, scuttling toward the dark woods.

The underbrush was thick; it tore at him. But it felt good, even, to have something tear at him, because it meant that he was free of the Dome.

Deeper and deeper into the woods. Until the tall, gnarled trees were all around him, and the soft darkness they made was all around him.

Sam rested.

He drew up his body into a big, fuzzy ball and rested; the ground was warm to him and the wood was friendly to him and he was tired, oh, so very tired because he had run and run.

Sam slept.

When he awoke, it was dark—not dim, but dark. There were not even any of the long-tailed things there in the sky. For a moment he was afraid and he was not sure where he was; then, slowly, he knew, and he was not afraid any more. And if he waited, it would get lighter. (It always got light after it got dark, if he just waited.)

He huddled there, waiting for the huge, bluish sun to rise, to give him light, so that he might see the new world around him.

By and by he heard strange sounds in the trees, and he knew that something alive, like he was alive, was up there making the sounds. He wanted to be able to see them, but it was still too dark. (Although,

far to his left, above the tops of the trees, he could see the jet of the sky begin to colour, oh, ever so slightly, and he knew if he waited just a little more he would be able to see the things up there that were alive like he was alive.)

He thought of the Dome while he squatted, waiting. And he thought of the ugly things inside the Dome.

They would stand there in the Dome, stand there before a little barrier and look into his room, and they would look in on him, stand and stare and watch him. They were always watching him.

They were tall and pale—with only two arms and only two legs and only two eyes—and ugly, oh so very ugly. And they looked all soft and squeezy. If he had one of them in his arms, he could mash it. Into a little pulp.

But when they got inside the black, shiny things, they weren't soft any more. They were hard, hard and cold. And he couldn't mash one of them then.

Sam had tried.

Not hard, not so hard they could see how strong he was, but hard enough to see that he couldn't mash one of them when it was inside a black, shiny thing, and when he touched them, they always touched cold and hard.

Ever since he could know, they touched cold and hard.

Sometimes he wanted to touch one of them when it wasn't inside a black, shiny thing, and it hurt him bad, deep, to think of that—wanting to touch one of them very softly (oh, so very softly), and feel one of them touch him and pet him until he went to sleep. But they always put on their black, shiny things when they came to see him, came into his room to see him, and they touched cold, not at all like he wanted to be touched.

But lately, it didn't hurt him so deep. Anyhow, not so much, lately.

They were too ugly, he told himself, not pretty like him, but ugly, and he didn't want anything as ugly as that to touch him, he told himself.

He didn't like them, he told himself. He never did like them, and that was why he had run away and away, because he didn't like them.

It was light, and he could see little things above him moving. They were very pretty, and he wanted to hold one of them in his hands.

But just to see them made Sam know that he was different from them in a way that he was not different from the ugly ones, and it

was very puzzling. He wasn't like the little, moving, alive things that he wanted to hold in his hands but couldn't because he did not know how to get up to them, up there in the treetops above him.

It made him sad.

He looked around, in the first dim light.

If he were back in the Dome, they would be bringing in the good-tasting things again; he looked around some more.

And he saw some of the good tasting things, hanging ripely red on a bush, there, ripely red and shining.

They tasted even better than they ever had, and he ate all he wanted, more than they had ever given him.

He moved on, deeper into the woods, and as he moved, he heard sounds all around him of things moving like he was moving, of things alive like he was alive.

One time he saw a big bulk of a thing, up ahead, through the dense trees, and he gave a little, sharp shout and ran after it, but it heard him, and it ran away, knocking down the littler of the trees, and he couldn't catch it because it ran so fast.

That made Sam feel very bad, very bad indeed, and he sat down and felt very bad for a long time.

Then he got up.

This time he wouldn't let one of them get away; he wouldn't make a cry so it could hear him; he would be very quiet until he got near enough to reach out and touch it, and then hold it, to keep it from running away.

Finally he saw another one of the alive things, not as big as the first and lots more furry.

He crept up on it very slowly.

He saw, when he was near enough, that it was bending over and eating at something that looked like it might have been alive, once like he was alive, but that wasn't alive any more.

Sam was very close now, behind a little tree, watching it eat, hearing it eat, seeing long teeth rip into the thing on the ground.

Sam stepped out.

The thing that was eating stopped eating and threw back its head and opened its mouth, and the green stuff dripped from its jaws.

It made a very loud sound.

Sam was very happy. Sam made a loud sound, too.

Sam moved in, and it backed away, still making sounds.

Sam wanted bad to touch it.

He got ready, tensing his muscles, and sprang.

Sam caught it around the neck, and Sam held on to it. It thrashed about, but Sam was very strong, and he didn't let it get away.

It tried to put its long teeth into one of his arms, but Sam wouldn't let it because he was afraid it might hurt him, worse than the brush had scratched him, worse than that.

For a long time Sam held it while it fought and snarled, and he ran his fingers through its fur, and that felt good to him. Sam made noises of pleasure, and petted it, and liked to feel it warm in his arms against him. It was furry like he was furry. But he knew that he was more like the ugly ones than he was like the furry things.

So Sam let it go, and it ran away, and Sam felt very sad again, and very puzzled, too.

Sam sat down on the ground and looked at the thing that lay on the ground, not moving, half eaten up.

Sam squirmed over, alongside of it, and petted it, but it wasn't any fun because it was still and cold.

Sam finally took his strong hands and tore out some of the greenish meat.

Sam tasted it, and it was good, better even than the round, red things.

He ate until he couldn't eat any more, and then he coiled up against what was left of the body that had fed him and slept for a long time, happy.

Sam was hungry again. He had moved on into the woods, and he was hungry again.

He knew he was hungry when he saw one of the furry things like he had eaten of, ahead of him, eating of the low-hanging leaves.

Sam knew that if he walked up to it, it would run; knew that if he wanted it to lie down so he could eat of it, he would have to make it lie down, or it would run away.

Sam was afraid he couldn't get close enough because there was an open space, a wide open space between them, and if he tried to cross it, it would see him and run away.

Sam wrinkled his brow.

Then Sam picked up a hard thing that lay on the ground, a big, hard thing, that was heavy.

Sam knew he could hit the alive thing before him with it, and when he did, he would knock it down, like he had knocked one of the ugly ones down, in his room there, against the Dome, when it had brought him his good-tasting things.

Sam threw the rock.

Sam heard it hit, and Sam was right behind it. He pounced on the live thing that lay kicking, rushed and fell on it, and it squealed and squealed and Sam knew that it was afraid.

Sam dug his hands into it, and it squealed some more.

After a time, it stopped squealing, and Sam ate, ate of the warm meat.

When he finished eating, he thought about what had happened, and he decided that alive things don't like to be made not-alive things.

And he thought he ought to remember that: for if he didn't like something, he might want to do something to the thing he didn't like that it wouldn't like to have done to it.

Sam squatted on the hill and looked down on the Dome. It was a very tall and very steep hill, and the Dome lay down at the bottom of it, and Sam looked down on the Dome.

He crouched very low so they wouldn't see him. He could see some of them in the black, shiny things on the outside of the Dome.

But he knew they weren't waiting for a long-tailed thing.

A long-tailed thing was very big and very pretty, and it made a loud sound like thunder-rumble. Only it just came once in a great while, and it stopped on the big, level place there. The black, shiny things would take stuff out of it and put stuff into it, and then, after a while, it would give a big sound, and its tail would lick out and out—the most pretty tail—and it would jump up into the air, and go up and up until it was just a little speck, just like one of those other specks up there. Sam thought maybe that's what stars were, long-tailed things, far, far away.

But they weren't waiting for a long-tailed thing today. They were still looking for Sam, and if they found him, they would bring him back, and then they would put him in the room again, on the outside of the Dome, there, where they could watch him.

There had never been anything but the room. Ever since he could know, he had always lived in the room. At first he was very little—so little that he could hardly know at all; and even before that, he thought; as if he had started to be alive there.

And they always watched him. (And when he didn't feel good, they would do things to make him feel better.) It was very strange, somehow: why they wanted to do all the things they did; as if they were all there just because he was, and for no other reason, and the only thing they wanted to do was watch him.

Sam didn't like that, not at all, because they were ugly, and

they would never pet him and hold him like he wanted to be petted and held.

Sam was very still, watching.

He didn't like them. He wanted to do something to hurt them, because he didn't like them; do something like he did to things he wanted to eat of, make them not-alive, because things that are alive don't want to be made not-alive; he wanted to make the soft, ugly things not-alive. Because they never petted him, never once petted him as long as he could remember.

Sam thought and thought about it, sitting there, very low to the ground, watching the Dome, and he finally thought of something he might do to them that they wouldn't like.

For he knew that they always put on the black, shiny things when they came out of the Dome, into his air, even into his air there in the room. And he thought (for he was cleverer than they thought he was) that the soft, ugly things put on the black, shiny things when they came out into his air because they didn't like his air just like he didn't like their air. (He had smelled it once, when some of it had leaked into his room; it was hotter than anything he had ever felt, and it made him very sick, and it hurt his eyes so he knew that he didn't like their air, not at all.)

And maybe that was why they had the Dome, so they wouldn't have to live in his air.

And if they didn't like his air, maybe —

Sam was excited. He was so excited that he wanted to jump up and down, but he was afraid to, because they might see him and then come and get him and take him back to his room.

Maybe, Sam thought, his air would make them not-alive. They wouldn't like that.

Sam crept down off the hill and then, when he was out of sight of the Dome he jumped up and down, and squealed little squeals of happiness.

After ten periods of the light, Sam was back again. The eleventh period was just beginning, and the bluish sun was purpling the horizon, way out over the mountains beyond the Dome.

And he looked down at the Dome and he smiled to himself and he felt very happy. It had been hard to do, but he felt very happy because it was done. He sat there on the top of the hill, looking down at the Dome, lying there under him, and he felt very happy.

It was a big, heavy thing, very big and very heavy.

It had been a long way away from the Dome, and he had had to



move it at night (so they wouldn't see him) all the way to the top of the hill.

He had used big sticks that he had found in the woods to move it, and he was very strong, very strong indeed, stronger than they thought, and he had moved it, and now he was ready.

Sam had worked hard, almost all of the ten dark periods. He stood looking down on the Dome. (And he would break it with the big, hard thing like he had broken the barrier, once, with the table.)

It had been hard to roll, but he knew there was just a little more to do, now, and he put a stick under the big, heavy thing and he pried and pried, with all his might, until the big, heavy thing finally teetered on the ridge and then—

It began to roll.

Slowly at first, and then faster and faster as it headed down the steep slope toward the Dome, faster and faster and faster.

It hit the Dome.

It was very hard, and it hit the Dome.

Nothing happened at first, and Sam felt very bad indeed.

Then he could see, in the dim mists of morning, a dent in the Dome, a dent that the big, heavy thing had made, and he thought it made a crack, too, over to one side, away from the dent, made a long, straight crack, as if it was a place not as strong as the rest that had cracked.

Three black, shiny things came out after a while.

Only three.

Sam thought that maybe that was all of them, that the rest were all not-alive.

There were only three, and Sam was stronger than they thought he was, and Sam would hunt them down, like he hunted things down that he wanted to eat of.

He began to clamber down the hill (and he was faster than they thought he was.)

He caught the first of the black, shiny ones and threw it to the ground; he pounded at the barrier (through which he could see the ugly, white face) until it broke.

Then he started off after the other two.

The last one, Sam took his time with. After he had peeled the black, shiny thing off, he shook the not-alive thing that had been inside; all sorts of funny stuff fell out and lay around Sam on the ground.

At last he threw the limp, white, ugly thing away and looked at all the other stuff.

And one of the things stared to move. It fluttered and moved in the mild breeze. Sam thought maybe it was alive, and he ran after it and caught it.

But it was not-alive, and Sam turned it over and over in his hands. It was very light and very thin. Sam could almost see through it. Sam looked closely at it; wrinkled his brow and looked hard at the funny, black marks on it.

*Dear Bertha,*

*The monster has been gone for nearly three Earth weeks. And, to tell the truth, I'm rather glad. I expect we'll close out this Experimental Station now and catch the rocket after next for home. So I'll be seeing you sooner than I thought.*

*After today, we are even going to stop looking for him. But since the whole purpose of the Station has merely been to mutate a human embryo and raise it to adulthood in an alien environment, I think we've done all that's expected of us. In fact, succeeded quite well.*

*We have, during the*

Sam shook it very hard, but the black marks didn't come off.

Sam thought, then, that it might be good to eat. But he found out it wasn't.





## Proving Ground

*They were an outpost of the human race, neglected and forgotten until the big ship landed with its promise of succour.*

*Illustrated by Harry Turner*

### I

Rion Decchi sat on the open verandah of his low wooden house and drank in the sunlight. With one hand he stroked the trim neatness of his iron grey beard while he contemplated the rolling acres of the valley before him.

About a mile away, in the shadow of the hills, he could see the thin trickle of smoke rising to the sky that marked the home of his nearest neighbour, Carl Spender. Beyond the smoke again, the low mounds of the hills bounding the valley were flecked and dappled as the long cloud streamers drifted slowly across the purplish sky.

Soon, thought Decchi, he would have to leave for the council meeting. It was now late morning, and if he wanted to make the

town in time for the noon meal he would have to forgo the further pleasure of lazing in the sun.

Even as the thought took hold and began to translate the urgency into shifting his heavily muscled body, the door behind him opened and the slim, black haired figure of his sister, Carla, came out of the house.

"You'll be late, Rion," she warned him.

Decchi nodded slowly. "I was just thinking the same thing." He got up out of his chair reluctantly. "I'll try to be back tonight, Carla, but if the meeting goes on too long I shall stay the night with Parjedy and return in the morning." He sighed. "This is one of the times when I wish I lived nearer town. These monthly meetings are too much for an old man like me."

The woman laughed mockingly and gently. "Old at forty-five? Go on with you, Rion. You're getting lazy, that's all."

Decchi grinned in spite of himself. In a lot of ways having Carla around was better than being married. His sister was not as demanding as another woman might have been, and she looked after the comfort of his home with exactly the right degree of unobtrusive care that met with his approval. At thirty-four she was strikingly beautiful with her wonderful complexion and clearcut features, and he knew that he was lucky to have her around.

He picked up his coat and went through the house and out to the stables at the rear, where he saddled his darvi and trap. The darvi was an old and gentle beast, long past the age of spirited service. Like Carla, its placid ways suited Decchi better than a younger and more active animal. It trotted steadily along the rough dirt road from the farm, its great, flat feet sloughing gently in the loose earth. The harness tinkled slightly, and the light trap rocked easily beneath Decchi's body. On Earth, long ago, he recalled, they had used an animal called a horse for similar duties, until the machine age had given them more speed and greater efficiency.

On Earth!

Decchi had been thinking a great deal about his native world of late. Not that he had ever seen it outside of the books and records preserved from the original landing and kept by the Central Council. It was, he supposed, the nostalgia of middle age. He remembered that his father had the insatiable longing to see Earth before he died. Probably his grandfather had been the same. It was a longing that could never be satisfied. All the old people sighed for the legendary and unknown "home world", and it seemed that the longing grew stronger with age. Everyone grew to it eventually, and perhaps the

growing stemmed from the eternal and unanswered question in the minds of old and young alike. Why had they been abandoned?

In his childhood Decchi had learned of the colonisation that had taken place over two centuries previously. It was standard knowledge for every growing youngster, just in case another ship came along. He had learned, too, of the fear and the anger and the frustration, each in its turn, when the supply vessels did not come as promised, and the months grew into years, the years into decades, and the decades into centuries. There had been no hint or clue to account for the brutal neglect that had sent the five hundred odd colonists and their descendants back to an agricultural semi-barbary in their efforts to survive. Finally, resignation had come to bring a measure of contentment, but still, two centuries later, the question was still asked, and still unanswered—Why?

Before him the road levelled out into the rough paved smoothness of the main road into the town of Newville—the site of the first landing and the first settlement. The fields on either side gave way to buildings of rough hewn stone and wood, with gardens between that flowered in riotous profusion. The soil of the planet was nothing if not productive.

Decchi made straight for the house of the Widow Hemming, where he lunched quietly and smoked a pipe. Then he made his way across the town square and went in through the ornate wooden doors of the Council Hall. In the lobby small groups of council members, newly arrived, stood and chatted quietly. Easter, the produce organiser, lean and dark, nodded affably to him, and continued an animated conversation with Helgar, the short, plump agricultural supervisor.

Decchi paused for a second, his eyes searching among the tangled groups, before he spotted Parredy, the council leader, waving to him from across the lobby. Decchi smiled a greeting and crossed towards the Leader.

Anton Parredy was a small, withered man with a seamed face and sparse white hair. Only his bright, birdlike eyes and his clipped strong voice indicated the energy that lay within his thin body. He had been Leader of the Council for nearly twenty years, and never once, to Decchi's knowledge, had he missed a meeting. He smiled and welcomed Decchi cheerfully.

“Ah, Rion. Managed to be early for once, eh?”

“It's all right for you,” retorted Decchi affably, shaking the

proffered hand. "You live practically next to the Hall. I've got a journey to make."

"You should give up the farm and move into town. We can still do with a permanent Council official, you know," said Parredy.

Decchi shook his head. "With farm produce down last year we need all the arable land and all the farm workers we can get, Anton. Anyway, I'm no blasted pen pusher. What about the meeting? Is there anything special?"

"Yes, most of it bad," replied Parredy. "I had a message from the southern province yesterday asking for grain supplies. Seems their bad harvest of last year had caught up with them. They've held out as long as they could, and now," he shrugged, "anyway, it will be on the agenda and I may need a bit of support."

"You can count on me," said Decchi. "Anything else?"

"A request from the Barlby farm for assistance with the fruit crop."

Decchi snorted angrily. "They've left it late as usual. Well, if we don't help them most of the crop will rot on the trees, and we can't afford to lose it."

Somewhere close at hand a bell sounded through the babble of voices and the groups began slowly to make their way into the large council chamber. It was a low roofed, rough panelled hall some ninety feet long and forty wide. When it wasn't a council chamber it served as dance hall, concert theatre, court room and lecture hall—in fact, it was anything for which it was required. At the far end stood a double row of tables joined at one end by another and shorter table. Parredy and senior members of the Council sat at the head while the fifty odd Councillors distributed themselves slowly round the remainder of the tables.

Decchi sat a few places away from the top table and exchanged brief greetings with the men on either side. Most of the members he met only at Council meetings, never socially, for only a dozen of them represented the town itself. The others came from as far away as thirty miles, from the outlying farms and hamlets to represent the small groups who had chosen them. In comparison, Decchi realised, his own short five mile trip was a mere fleabite.

The meeting got under way. Minutes were read and approved; Decchi yawned his way through a Produce report, showed slight interest when an outbreak of some virus infection among the children of a small village was mentioned. He raised a hand in half-hearted

support of a quarantine motion, and wondered for the hundredth time why he bothered to attend.

It was an hour after the meeting had started that one of the townsmen hurried into the hall and made straight for Parredy. He interrupted an uninteresting speech, and brought speculative glances from all sides. Even Decchi perked up from his semi-comatose disinterest to speculate on the unprecedented fact that someone was daring to interrupt a Council meeting.

The man whispered animatedly in Parredy's ear, and the tension mounted as Parredy's face grew pale and his jaw dropped in utter and complete astonishment. His croaking, "I don't believe it," whispered though it was, seemed to echo all round the silent hall. Thoughts of a fire or a flood or some other catastrophe chased through Decchi's mind, and his inner tension rose to breaking point as Parredy's eyes swivelled and fixed steadily on him while the man still whispered and gesticulated at his side.

At last Parredy nodded and waved him away. The entire Council sat taut and silent as the Leader rose shakily to his feet and said, "I have just been informed, gentlemen, that a giant space ship has landed to the north of the town, in the vicinity of Rion Decchi's farm."

## II

From one of the side observation ports High Captain Rodric and several of his officers looked out at the growing crowds that were gathering at a respectful and respectable distance from the ship. There were perhaps a couple of hundred of them, and more were arriving on foot and in small carts drawn by strange four legged animals.

Rodric had chosen the plain for a landing place since it was no great distance from the main centre of population. He had set down in the shadow of a low line of hills as partial protection from the wind and the weather which would sweep in from the sea. Through the glasses he could see that the dress of the people was rough and quite clearly a product of local laborious hand weaving. Even the poorest factory could have turned out better cloth than these people were wearing. And the fashions !

"Clearly humanoid," remarked Halvor, the first officer, who stood next to him.

Rodric chuckled grimly. "Clearly human, would be better."

"Their skins are darker."

"So would yours be if you'd lived all your life under this damned purple sun."

"You think it is a lost colony, sir?"

"What else can it be?" countered Rodric. "I'm no ethnologist, but there are sufficient clues out there to tell me that they came from Earth in the first place. How long they've been here—" he shrugged.

Halvor's lips thinned slightly, giving his thin face an even more hawkish twist. "Then there could be trouble, sir. If they think they were abandoned deliberately—"

"I recall the Van Ambert story very clearly, Mister Halvor," Rodric broke in coldly. "I shall take such precautions as I think fit."

Halvor remained silent. The story of Van Ambert and his crew who had stumbled on a colony deserted for almost a century was not a pretty one. They had been well treated until their suspicions were lulled, and then an unexpected night attack had wiped out all but a handful before they knew what hit them. Their ship had been destroyed, and eight men—all that were left of a crew of over four hundred—had managed to get off in a lifeboat. Halvor had shipped with one to the survivors in later years, and the stories he had told of the affair were not easily forgotten.

Below them a group of six men detached themselves from the main crowd and approached the ship hesitantly. They stopped below the main observation dome, eyes lifted to look at the towering mass of the hull that bulked over them. Rodric turned his glasses on them and studied them intently.

"There, if I'm not mistaken," he said, "is a deputation of Elders or whatever they call them here. See, Halvor, the wizened old man in the centre. The chief or headman, and the others will be his assistants." He paused and continued his study for several moments more. Then, "I think we will go down and meet them, Halvor."

"Is that wise, sir?" The query was out before the chief officer could prevent it, and Rodric's blue eyes snapped at him icily.

"I believe so, Mister Halvor," he retorted coldly. "See if Scelba and his crew have completed their tests."

Halvor saluted and left the observation dome, glad to escape from his captain's uncertain mood. He returned a few minutes later with Scelba, the head physicist, a rugged individual with a rock-like face beneath a bald dome of a head. He was a good man, bright without being brilliant, and he was always constructive without being obstructive. If a thing could be done then he did it, and his

obedience to authority was not the least of his virtues in Rodric's eyes.

"Good news, I hope, Scelba" Rodric greeted him.

The physicist nodded to the assembled crowd. "Those people out there tell most of the story, sir. Nitrogen seventy-seven, oxygen twenty-two. The rest," he shrugged. "It's earth type to within one per cent. Gravity is point eight seven. No evidence of any harmful bacteria, but I expect we'll have the usual quota of fever cases and general disability. Adaptability is a minor problem though."

"There, Halvor." Rodric's good humour returned as he nodded approval in the chief officer's direction. "You and I, Scelba and Harlow, we'll go out together with four crewmen. Side arms to be carried as unobtrusively as possible. Ready in ten minutes."

Ten minutes later the outer door of the main air lock slid open and the clean sweetness of the outside air mingled with the sterile humidity of the chemicalised air that was the ship's atmosphere. Even a few breaths of it made Rodric feel better as he stepped on to the landing ramp and led the party down to the green turf below.

### III

Even in his wildest dreams Decchi had never imagined that a star ship could be so big. The story of the emigration from Earth had spoken of a vessel four hundred feet long and almost two hundred abeam. But this—!

He stood with Parredy and Helgar and Easter and the others who had agreed to form the official welcoming committee, and gaped with unbelieving awe at the monster that spread itself across the outer reaches of his pasture land. It must have been all of fifteen hundred feet long, and its girth towered into the air almost five hundred: a great, pointed, tapering cylinder that had power and strength quivering in every sheer line of her gleaming hull.

Against the background of the ship the group of eight men in the stiff grey uniforms looked small and insignificant, but as they came nearer there was no mistaking the strength and purpose of their leader. He was well over six feet tall, a bull of a man with a strong, rugged face that was scarred down one side to give his eyebrows a cruel devil's twist. His eyes were deepset and icy blue, and the left side of his uniform was a blaze of colour; he carried himself with an inborn arrogance that brought with it an instinctive inferiority. On the close fitting metal helmet there gleamed a single golden comet that

Decchi knew to be the symbol of the Terran Space Fleets. At least, thought Decchi, we are certain they come from Earth.

Rodric for his part, was wary because he needed the co-operation of these people to supply his ship and his crew.

Parreddy, aware of his people's obvious poverty and backwardness, was quite at a loss to make a suitable remark. In all his years as Council Leader he had never envisaged a moment like this. He opened his lips two or three times, and each time he thought better of it. Finally, in a momentary panic and desperation, he cleared his throat and croaked hoarsely, "Good afternoon, gentlemen."

Some of the grim wariness left Rodric's eyes at the incongruity of the greeting. He smiled slightly, and then chuckled appreciatively at the unexpected humour of the remark. At least he could understand what the fellow was talking about.

"Good afternoon," he responded. "I am relieved to find that a translator is not needed."

Parreddy returned his smile with equal relief. "Your accent is strange, but I suppose that is only to be expected after two hundred years."

Rodric's eyebrows rose in surprise, and behind him he heard Halvor and the others murmur briefly. "Two hundred years? You mean since the colony was established?"

"Yes, of course!" Parreddy was, in turn, surprised. As the implication of Rodric's question was borne upon him he asked shakily, "You mean, you—you didn't know we were here?"

Dumbly, Rodric shook his head.

"Then you—that is, they didn't send you here from Earth?"

"No, we were forced to land here by accident."

Parreddy turned helplessly to Decchi and the others. The certainty had been strong in all of them, that here, at last, was the supply ship sent from Earth to find them. Earth had made contact with them again and their troubles were, at long last over. Their struggles with an alien culture and against alien pests in an alien environment had seemed things of the past. And with a word this big grey man had shattered all their hopes.

Decchi was the first to recover. Dimly he knew that the silence between the two groups had grown embarrassingly long. The leader of the other group was eyeing them with increasing suspicion, and one of the crew men at the rear was resting a hand on what was clearly some form of side arm.

"My name is Decchi, sir," he spoke hurriedly and a trifle too heartily. "This is the Leader of our Council, Anton Parreddy.

These others are also members of the Council. And this," he waved his arm in a vague, all embracing circle, "this land on which you have landed is part of my farm."

Rodric relaxed slightly and bowed. "Rodric," he replied. "High Captain of the Terran Grand Fleet. This is my chief officer, Commander Halvor."

"My house is beyond the trees, Captain," said Decchi. "My sister is already preparing a meal for us. I should be honoured to entertain you. Besides, we can talk more freely over a good meal and a jug of wine."

Rodric managed a glassy smile to try and cover his horror. The very thought of eating and drinking with the mob of barbarians who stood before him made him feel sick. The thought, too, of eating food prepared by their women was even more unsettling. Frantically he tried to think of a reason for refusing without offending them. There was none. There were repairs to be made to the ship, and there were stores and food which he needed for his crew. For all this he needed the good will of these people. He cursed mentally, there were endless reasons why he would have to sit down at this man's table and eat his damned dirty food.

"We shall be honoured," he replied thickly.

The house to which they were taken was built of rough stone blocks and wooden logs, the logs predominating. It was neatly laid out and attractively decorated with flowers and shrubs. The garden around was bright with strange blossoms, and over it all was an air of peace and serenity that helped, in small measure, to quiet Rodric's fears.

Decchi led them up a short flight of steps to the shaded verandah, and as his host went ahead Rodric managed to signal the four crewmen to wait outside. He caught a momentary glance of approval from Halvor, and felt annoyance that the younger man should be looking for trouble at this stage. He followed Decchi into the shade of a large, airy room. The furniture was plain and decoration austere. A large table was covered with clean, white linen on which rough, hand-made cutlery and pottery stood in orderly array.

"Carla," Decchi called into the back room. "Our guests are here." He turned and smiled at Rodric. "She is not expecting you and your officers, Captain. I think she will be a little surprised."

Rodric smiled dutifully, but was quite unprepared for the beauty of the woman who came into the room. She halted, startled, as her eyes came to rest on the grey clad strangers, and Rodric had time to appraise her tall, poised figure under the white apron and coloured

dress. Used as he was to the thin, brassy women of Earth with their close cropped hair, painted features and erotic modes of dress, he never thought that feminine beauty could be portrayed in any other way. The thought of long, coiled hair would have appalled him had he been told of it, but seeing it now, flowing over the slim shoulders and outlining the pale, astonished face, it held a charm that he never imagined could be. The rough clothes could not conceal the mature beauty of her figure, and she had a youthful poise that did not go with the grey beard of her brother. Rodric put her age tentatively at thirty or thirty-two—just six years short of his own thirty-eight.

He managed a jerky bow, and murmured, "I am honoured to meet you, ma'am, and I thank you for your hospitality."

Carla eyed the stranger in sheer bewilderment. Since the ship had landed some three hours earlier she had anticipated an alien visitation, and this man was clearly not of her world. Yet he spoke her own tongue though the accent was oddly formed.

"This is High Captain Rodric," said Decchi with a smile. "He is the commander of the ship which has come from Earth."

"From Earth!" Carla's hand flew to her throat and her face coloured with the shock.

"I fear that we are intruding. Clearly, Miss Decchi was not expecting so large a party," began Rodric awkwardly.

"No, of course you must stay, Captain," Carla interrupted breathlessly. "I will lay some extra places. There is plenty for all."

Rodric gave her a smile of genuine gratitude. He realised that he was so far out of his depth that retreat had been a blind impulse—and a wrong impulse at that. Somehow this lovely woman had saved his face, and his gratitude mounted accordingly.

The food, much to Rodric's surprise, was good; in fact it was excellent. As he sat back after the meal with a large jug of mulled wine he felt as consciously at ease and at peace with the universe as he had ever done in his life before. The presence of Decchi's sister, moving quietly round the room serving food and drink, had helped. Or perhaps it was the effect of the sweet tasty wine. Whatever it was Rodric found himself following her graceful movements with ever increasing appreciation.

Halvor, he noticed, had thawed to a degree of humanity which he had never seen in the younger man before. In all his dealings with the chief officer he had noticed an almost machine-like stiffness and lack of emotion—the kind of outlook that would make a first rate ship commander in a few years when age had mellowed the youthful

impulses. Then again, he thought, perhaps the wine was making him see everything in a more favourable light.

Rodric lifted his jug to Decchi. "A wonderful meal," he pronounced. "Your sister is as accomplished as she is attractive."

Decchi smiled his thanks. "She would make a fine wife for some man, but no one has yet succeeded in charming her away. In that, at least, I am lucky."

"Indeed you are," agreed Rodric.

There was a pause which lengthened and became more awkward. Then Parredy remarked gently, "I think, Captain, you will agree that the time has come for a more official talk."

Rodric drained his jug and felt the sweet, warm liquid flooding through his vitals. He looked hard at Parredy and nodded. "Yes, I agree. Perhaps if you asked some questions the replies would be more enlightening than any tale I could tell."

He felt the tension increase as he finished. Everyone knew that he had thrown the ball back in Parredy's lap. Parredy saw it too. He pursed his lips and studied the top of his jug with an all too obvious intensity. Clearly, he knew that the wrong question to start with would spoil things before they had even begun.

Rodric saw it as well. He knew that he had said the wrong thing, that the old man was looking for a trap that was not there. In a more conciliatory manner he remarked, "I think there is one question that each of you wants to ask. I think also that you are afraid to ask it." They all eyed him keenly. "I think you want to know why you were abandoned after the colony ship had left you here. Is that it?"

Parredy looked quickly at Decchi and then at Easter. Then he nodded slowly and replied, "Yes, Captain, that is what we wish to know."

"What year did you land in? What Terran year, that is?"

"In the records it is shown as two thousand three hundred and twenty-four." Parredy twisted his fingers slowly together. "We have kept to the Terran calendar as far as we could. The period of rotation of this planet is much the same. I think that we have been here just over two hundred and three years."

Rodric cocked an eye at Harlow, the astro-physicist. "They're not very far out."

"Considering the obvious difficulties," agreed the thin faced officer. "I doubt whether they've had much time or opportunity to make an accurate study of astronomy."

Decchi smiled his gratitude at the man's understanding. "No, we have been otherwise engaged."

"I suppose your relief supply ship was due about twelve months after the original landing?" asked Rodric.

Parredy nodded. "Minimum, twelve months—maximum, eighteen. At least that's what the records tell us."

"But it never came," said Decchi. "Naturally," he grinned ironically, "we and our ancestors have wondered why."

"In two three two five," Rodric told him grimly, "six Terran colonies in the Outer Reaches were overrun and wiped out by an alien invasion."

Shocked silence greeted the almost matter-of-fact statement. Parredy's face was pale under its mass of wrinkles, and Easter gazed grimly across at Decchi as final understanding dawned on them both.

"Within six months," went on Rodric, "Earth was fighting for her life. The only thing that saved her from immediate extinction was the fact that the aliens did not know where the home planet was situated. In two years we lost over twenty colonies and were forced to abandon eighteen others." He gazed sombrely at Parredy. "At a guess I would say that you were one of those eighteen. We had neither the ships nor the men nor the supplies to waste in futile efforts at nourishing small groups of the race who were cut off from the main body. We had to centralise our resources and use them where they would do the most good. We hoped, that those we left to their own devices would survive until our victory was assured."

"But two centuries," breathed Parredy.

"And now," said Decchi, "you have come to relieve us."

Rodric pursed his lips and looked at the table before him. It wasn't a question that Decchi had asked him, it was a statement and one which he couldn't ignore. The others were sitting tense awaiting his confirmation; Halvor shifted uneasily in his chair, and Harlow studied his wine jug with obvious embarrassment.

"Well, Captain" asked Decchi, softly.

"No," snapped Rodric abruptly. "No, we haven't come to relieve you. The truth of the matter is that we didn't know you were here until we landed."

Parredy made a weak, bewildered gesture with one hand. "But, if the war is over—?"

"Who said it was over?" rasped Rodric. "Yes, it's been two centuries, and still we haven't won. Oh, we're winning, but it will be a long, hard struggle before we can stand back and say this is where we came in. Perhaps in another fifty years the end will be in sight, but I doubt if it will be in my lifetime."

"Then why did you come here?" snapped Decchi.

Rodric drew a deep breath and reflected that things were not going the way he had intended. He had hoped that the reasons and the necessity for his landing would not be revealed except as and when he wanted them revealed. But these men, with their long bred sense of being deserted, their desire to be reunited with their home planet, had turned him their way and cornered him with their desire for knowledge.

"We came by accident," admitted Rodric.

"Go on," said Parredy grimly.

Rodric sighed. "One of the things that will affect the outcome of the war is lying out there, on your pasture land, Decchi. My ship is the first of a new class with bigger weapons and more power than any other ten ships which have preceded her. She is, we hope, the final answer to the question mark against Terran superiority. This was our proving flight. We left Earth three weeks ago to carry out full scale tests in what we thought would be an unfrequented quarter of space in the Bootes and Lyran sectors." Rodric smiled grimly as he thought of the days of tests which had covered every gadget and every plate within the vessel; manoeuvre after manoeuvre had left him purring with pleasure, and then, at the end of their seventeenth jump, right in the centre of the so called 'safety' area, and almost within touching distance, had lain an alien ship.

The odds against such a meeting were literally millions to one, and the shocked amazement with which Terran and alien had viewed the situation was mirrored in the frozen seconds spent gaping blankly at each other through the search screens. Rodric's voice expressed his grim satisfaction in the thought that the alien no longer existed. It had vanished in the howling broadside that Rodric's gunners had loosed a bare second before the enemy armament had flared defiance. That second had almost brought destruction to Rodric and his ship.

"Almost, but not quite," he told his listeners. "We had a smashed screen unit, five dead men, and a disrupted drive chamber. That we could have fixed once we got back to Earth, but we weren't given the chance."

"What happened?" asked Parredy as Rodric drank from his jug.

"A small fleet of aliens chose that very moment to appear some way off. I couldn't take any chances. We jumped blind and hoped they wouldn't be able to follow us. Your system was the nearest one we hit, your planet the only habitable one for light years. We had no choice but to land here."

There was a long silence while Parredy, Decchi and the others

took in the news that sheer chance had brought them once more into contact with Earth.

Suddenly, Decchi asked, "Why? Why did you have to land here? Why don't you return to Earth now?"

Rodric pursed his lips. The grey bearded man who was his host had asked the one question he had hoped would be avoided—at least, for tonight.

"When we left Earth we were supposed to be gone for only three weeks, and because of that we carried only a month's stores and supplies. We had been out two weeks when we were forced to jump blind, and we took a further week under normal power to reach this world of yours. We have barely a week's supply of food, water and air available, and we are many weeks out from Earth. We'd never make it home without replenishing our supplies."

"Also," remarked Decchi casually, "your ship is damaged and needs to be repaired."

There was an angry certainty in Rodric's mind that Carla's brother was a lot smarter than he looked. Too much was being revealed too soon for Rodric's peace of mind.

"Tell me, Captain," put in Parredy, "what have you to do so that you can get your ship back to Earth? And what do you want from us?"

Rodric made his decision quickly. There was nothing to be gained from trying to hide the facts, and everything might hinge on a display of honest forthrightness.

"Our situation is simple. The ship is damaged. Not seriously, but enough to keep her inactive for several weeks. When our supplies are gone we shall have to find other sources to maintain the needs of the crew."

"Suppose this had been a barren world?" asked Decchi.

"It isn't, so speculation is idle," snapped Rodric. "Oh, we'll pay for what we need. No, not in money," he waved away Parredy's protest. "I shall have men to spare. They will be detailed to help you in whatever work you think important. I'll get our technicians to rig you a power plant. All I want is your aid in getting this ship home to Earth in one piece. If we get home the war will, I hope, be shortened considerably. If we don't—" His words hung, knell like, in the air.

"If you don't?" prompted Parredy gently.

"Earth's fight will be put back for decades to come, and you will be left in continued isolation."

"But they can build another ship."

"It took five years to design and build this one," snarled Rodric.

"It took another two to iron out faults and make sure she would fly safely. They'll assume something went wrong if we don't return, and they'll spend a few more years trying to find out what it was. Time is precious, that's why we must get back."

"And suppose we cannot help you?" asked Parredy.

"Then we shall take what we need as gently as we can."

"Ah! So there we have it," breathed Decchi.

"I only want to impress upon you the seriousness of the position," insisted Rodric. "To shorten the war I would do anything."

A dead, heavy silence settled over the room. The mellowing influence of the food and wine was lost in the turmoil that had followed. Decchi and Parredy, Easter and Helgar, sat grim faced, silent, while Rodric looked from one to the other in sombre speculation. Now, he realised, the position was clear, whether he liked it or not.

Halvor cleared his throat, and then asked mildly, "Incidentally, what is your name for your parent star?"

"Strangely enough, we call it the Sun," replied Parredy. "For some reason the official name was never popular and has been buried—"

"Quiet, Parredy," rasped Decchi suddenly.

"What?"

"I said, be quiet, all of you." Decchi turned blazing eyes on Rodric and his brother officers. "So now, all the cards are down, Captain. There was something odd about your story that I could not lay a finger to. Now, I know it is. You had to jump blind, isn't that so?"

Grim faced and thin lipped, Rodric nodded curtly.

"Then I'd be right in thinking that there is another complication that you haven't told us about? It wasn't that you were unable to return to Earth, only that you didn't know how." Decchi laughed softly. "You're lost, Captain, that's it, isn't it?"

Rodric cursed to himself. Halvor's tactic had been right, and it had nearly succeeded—except for Decchi. He nodded, "Yes, that is it. We're lost. We need you to tell us where we are."

"And that is our advantage, Captain. If you treat us badly we should repay force with silence," said Parredy. "Unless we have some guarantee that we shall not be left to our own resources for another two hundred years we shall withhold all help and all information."

"Someone will talk," countered Halvor coldly. "We'll see to it."

"Don't be a fool, Commander," laughed Decchi, ironically. "How many people do you think know exactly where this planet is?"

How many people on Earth could give you an accurate perspective of their world's position in the Galaxy?" He gestured round the table. "I doubt if any one of us here has even a vague idea. The parent star is still known as the Sun to us. Its official name has been buried under two centuries of struggle to survive in an alien world. As Mister Harlow said earlier, we haven't had time to make a hobby of astronomy. Earth is out there, and we are here, that is all any of us know and it would do us no good to know otherwise."

"But your records," protested Halvor.

"Records," sneered Decchi. "They are buried deep. After two centuries they are buried even to us. All we know is where to look, and that we can forget very easily."

## VI

It was night as Rodric walked back across the rough grassland to the ship. It was a night in which strange constellations blazed to mock him, and it was made brighter as he neared the great hull by the glare of the arc lamps that illumined the immediate area around the ship.

There were still groups of local inhabitants clustered just beyond the area of the lights, shadowy figures that stared in awe and wonder at the rows of lighted ports and the gleaming metal of the vessel's bulk.

Rodric marched through them in black humour, shouldering his way through rough clad natives and stony faced crew men who formed a protective guard. Behind him straggled Halvor, Scelba, Harlow, and the four crew men, all of them apprehensive of the storm they knew would break as soon as they were back aboard. For Rodric's taut, pale features gave ample evidence of his uncertain state of mind.

Once in the ship Rodric made straight for his cabin with the other three officers trailing unwillingly after him. Once inside he slammed the sliding door viciously shut and swore coldly and vividly.

"Harlow," he snapped. "You're the astronautics expert. What are the chances of our finding our way home without the help of these—these barbarians."

Harlow shook his head in dismissal of the idea. "None at all, sir. I ran identity tests on the parent star as we approached. It could be any one of hundreds visible from Earth."

"Or not visible," added Halvor.

Harlow nodded agreement, and Scelba added his own confirmation to the statement of fact.

"Hell and damnation." Rodric pounded a heavy fist on the desk top, his face red and twisted with rage and frustration.

"We could always move in and take what we want," remarked Halvor.

"Don't be a fool, Halvor," countered Rodric. "Decchi might just be telling the truth. Anyway, he sounded logical. If we move in, or show any signs of violence they'll either destroy their precious records or hide them. And we haven't time to take the entire planet apart."

"These people are human beings," put in Scelba. "We'd be harming our own brothers if we resort to strong arm methods."

"Brothers be hanged," growled Rodric. "If they'd got any sense of such a relationship they'd tell us what we want to know, and let us get back in the fight. That way their own salvation would be that much nearer." He turned to his desk and waved a hand in vague dismissal. "Halvor, tell Brasek to suspend repairs for a day or two, I want to think about this some more."

When the others had gone Rodric threw himself, fully dressed on to his bunk and lay fuming. That bumbling old fool! What was his name? Decchi, yes, Decchi. But then, grudgingly, he had to admit that Decchi wasn't such a fool. He had seen the advantage of retaining as much knowledge as he could to be used as a bargaining point. He and Parredy and the rest didn't want to be shut out in the cold for another two hundred years. For that Rodric couldn't in all conscience, blame them. But to hold out in the face of the overwhelming need for Rodric and his ship to get home—

Rodric cursed again. In the morning he would try again.

He slept uneasily. His dreams were coloured by a grey bearded monster with devil's horns who was the double of Decchi. But the nightmares were softened by the raven haired beauty of Carla, who came willingly, a dream wraith, into his arms to comfort him. The implications to a psychologist, would have been unmistakable.

In the morning he didn't go at once to see Decchi and Parredy. He sat in his cabin and brooded, his mood growing blacker by the hour. At midday Halvor interrupted his hours long reverie to bring him an invitation that he should visit the Decchi farm again that evening for dinner, and to have further talks thereafter.

Rodric's eyes gleamed at the news. Here was the first bright spot in a black day. He shook his head decisively. "No, Mister Halvor, not this time." He rose from his desk and smiled, a thin

lipped, grimly nodding gesture. "Give my compliments to them, and tell them that I wish to return their hospitality. I should be honoured if Miss Carla and her brother, Parredy and the rest would dine here, in my cabin. I'm sure they would be intrigued to see the inside of my ship. Oh, and you will be here together with Scelba and Harlow. It should be quite a gay party."

Halvor opened his mouth to say something, but thought better of it. The workings of Rodric's mind were not always clear, even to him.

By early evening, as the shadows fell purple, around the ship, and the great arc lights blazed their light across the countryside, Rodric's cabin was arrayed in all its formal glory. The austere metal table glistened with glass and metal table ware; the wall lighting was shadowed and coloured to soften the bleak, hard lines of the grey metal walls. From his precious store Rodric had broken out the last few bottles of Terran wines and spirits. He himself was resplendent in his full dress uniform which gleamed with gold braid and medal ribbons. He felt absurdly confident that his hospitality would go a long way towards dispelling the bad impression that had arisen the previous evening. That, he now realised, had been a mistake. And even if the hospitality failed he had other plans.

They arrived promptly. Halvor brought them down to the cabin beneath the control bridge, and they entered with the light of wonder and awe bright in their eyes and on their faces. Carla came first behind Halvor, her eyes sparkling and her face flushed. Rodric felt his heart jump a little as he saw her, slim and lovely under the soft lights. Then, in turn, came Decchi, Parredy, Easter and Helgar, each dressed in what was clearly their best clothing. It was rough and heavy after the fineness of Terran cloth and fashions.

"Miss Decchi," Rodric bowed clumsily over her hand, and felt a burst of absurd gallantry at the pleasure with which she greeted him. "If my kitchen staff serve a meal half as good as the one you gave us last night, then our evening is assured of success."

Carla blushed and bowed her head in acknowledgement of the stiff and clumsy compliment. Here, she thought, is a man who knows little of women and their ways. He compliments their cooking and not their appearance. Even at his age he has a lot to learn.

"Decchi." Rodric smiled as warmly as he could. "I fear my departure last night was abrupt and rude. I must confess to some blame for the attitude which developed. I—ah—I am a worried man, and that can be my only excuse."

He greeted the others in turn and waved a hand expansively to the table. "Come, let us eat and drink. We can talk later. I have always believed that a good meal is spoilt by too much conversation."

Rodric seated himself at the head of the table with Carla on his right and Decchi on his left. Parredy faced him from the other end and the others covered the intervening space. And the meal was good.

Even Rodric, used as he was to ship board fare, had to admit that the chief steward and his staff had done extremely well with what was to hand. Tongues loosened under the influence of the red and white wines that went with each course, and later, with the coffee, the syrupy liqueur put the seal on a successful meal.

With Carla at his side Rodric felt he'd never known a more pleasant evening. The cares and worries of his position and responsibilities lay lightly at the back of his mind to be brought out later, but not to be allowed to spoil the pleasure of the moment.

"A wonderful meal, captain," Carla told him, and her flushed face and sparkling eyes showed the sincerity of her words. "Earth must be a wonderful place if all the food is as good as this."

"Home is always a wonderful place, Carla," remarked Decchi enigmatically, and Rodric felt forced to cover the ambiguity of the remark by raising his glass and saying, "I'll drink to that, Decchi."

"This ship is your home, captain," said Carla when the toast had been drunk, "this, or another like it."

Rodric looked at her sombrely. The remark, coolly spoken, was nearer the mark than she knew. Or did she? Her shadowed eyes looked at him long and questioningly. With her feminine instinct she had touched a truth that Rodric hardly recognised himself. Ships were his home, this ship and the one before it and the one before that; right back as far as he could remember. First as a cadet and then as a junior officer; from lieutenant to commander to captain to high captain. Always there had been a war; his grandfather had died at Rigel Four, his father in a raid on the third planet of Kruger Sixty. All his life had been war and battle, courage and discipline, fear and frustration. A different woman stood at the back of every battle and every flight; women with the same insecurity as himself, the same ache to be wanted, if only for a few short hours before the war was thrust back into their lives. For the first time Rodric saw the shallow waste that had been his life, and it had been brought home to him by a simple question from a woman whom he had regarded at first as some sort of barbarian.

He shook himself, aware that his silence had lasted embarrassingly long. "Yes," he replied. "Yes, ships are my home, and their crews my family." He grinned mirthlessly at an impossible joke.

"I never dreamed a ship could be as big as this," Carla said. "The one that brought our ancestors from Earth wasn't a third as big as this, was it Rion?"

"So I believe," nodded Decchi. "Er—from the records, you understand, captain."

Rodric ignored the barb. There would be time enough for talk later on. He wasn't yet ready to spoil the pleasure of the evening.

"I would love to see more of the ship, captain," Carla's voice broke it on his thoughts. "It is an opportunity I may never have again."

Rodric's good humour returned. He smiled. "I shall personally show you the centre piece of the ship," he told her. "The control bridge." He noted with perverse pleasure the startled looks of Halvor and Scelba. "Mister Halvor, perhaps our other guests will find interest in Brasek and his engines. Perhaps you will act as their guide while I escort Miss Decchi to the control bridge."

He rose from his chair and slid open the door which was his own private entrance to the main control bridge, high in the superstructure of the vessel. The short corridor that lay beyond led to the elevator and he ushered Carla inside. They were taken up sixty feet to main deck, and the lift opened out into another passage at the end of which lay the large control room that was the nerve centre of the ship.

As she entered the darkened bridge Carla gasped with delight as she saw the stars gleaming through the wide plastic dome that swept embracingly over them. Rodric pressed a switch and low lights sprang up around the metal walls. All about them gleamed the control panels, the switch boards, the dials, the levers, the buttons, all the thousands of items that were necessary for the control of the huge hull.

"I can't understand it," she said in a voice of soft wonder. "It is too vast—how can anyone work with all this and know what they are doing?"

"It is what we're trained for," Rodric told her quietly.

She moved away from him to the forward viewports, and from there she looked out across the darkened countryside as it faded with the distance and the night.

"I was right, captain, wasn't I, when I said that this ship was your home?" She spoke softly and there seemed to be great understanding in her voice.

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"Yes." Rodric made the admission before he knew it in a tone that was husky and not his own.

She was inches in front of him, her dark hair glistened in the subdued lights of the bridge. He felt a rising tide of emotion such as he had never known before, quite different from the lusts that Terran women aroused. And because it was so different from anything he had ever known he could not fight it. Before he knew it she was in his arms with her cool lips soft under his, and her body pliant against him. For seconds the torrent raged about him as he caressed her and savoured her whispered endearments, while his own mouth uttered words and thoughts that he had never dreamed of in his life before.

Then, as suddenly, the storm subsided.

The shock of his lapse hit Rodric like a douche of ice cold water. He realised with mounting horror that this was what he had intended all along, right from the minute he had issued his outrageous invitation. No wonder Halvor and Scelba had looked at him with raised eyebrows.

He released her as if she'd been a hot coal, and stood away, stiff, red faced, and ice cool again.

"I must apologise, Miss Decchi. I have abused your presence on my ship, and I must ask your forgiveness. It—was inexcusable."

Her eyes were cool and pitying, and her serenity stopped the flood of his words. She asked, gently, "Is it so hard for you to love?"

Just for a moment his composure broke. "Hard?" His voice was a rasping croak as he repeated the word. "Hard? For me it is impossible."

He turned and walked stiffly from the bridge towards the elevator. She followed more slowly, and they returned wordlessly to his cabin.

## VII

Halvor, Decchi and the others were still there. Rodric realised with sudden rage that they had never moved; they had sat there waiting for his return. In Decchi's eyes he saw sardonic humour, and on Parredy's face the understanding of an old man.

"Gentlemen," he rasped. "I invited you here for one purpose tonight. I wish to ask you again if you will afford me the facilities and the knowledge that I need to repair my ship and return to Earth. Now, what is your answer?"

"We cannot give what we do not have," replied Parredy. "We had a poor harvest last year, and we have sent aid to other parts of this land. We have not the resources to support a crew the size of yours for any length of time. As to the other—" he shrugged. "We do not want to lose this first contact with Earth after two hundred years. We must have some guarantee. You can see our point of view?"

Rodric eyed him coldly. "I see only that my—that our race is at war. I see only that you are hampering the victory of your own people, and by doing that you are hampering your own, eventual salvation." He turned away with bent head as if considering his next words carefully. "In that case, I have to inform you gentlemen, that you will be held as hostages aboard this ship until the necessary information and guarantees of assistance are forthcoming from your people." He swung round to confront their shocked faces. "In the circumstances I have no other choice."

Carla's eyes drew him like a magnet. She was sitting quite still, quite calm, her lustrous eyes pitying as she looked at him. "Love is impossible for you isn't it, captain?" she remarked softly. "You've never known anything but the iron fist in the mailed glove. I feel—"

A phone buzzed on the bulkhead above the desk, breaking the spell that seemed to bind them all. Halvor jumped for it, and listened with whitening face and worried eyes.

"Impossible." Even as he said the word, Rodric grabbed the phone from his hand, and demanded, "Repeat that. Captain here."

In seconds he turned, grim-faced to them, and replaced the phone on its magnetic rest.

"My plans are changed. There is an alien ship barely eight hours flight away. My spot control reports that it will arrive, on its present course, early tomorrow morning, possibly before dawn." His eyes burned as they swept over the huddled shocked group in the doorway. "Get out of here. Go to your homes and get out of my sight."

Halvor's voice said timorously, "Sir—"

"Didn't you hear me?" roared Rodric. "Get this rabble off the ship, Mister Halvor, and close up for action stations. When the ship is clear for take-off, report to me at once, here. I'll issue my orders then."

The door closed easily on its pneumatic spring, and silence lay where turmoil had been bare seconds before. Slowly Rodric stripped off his dress uniform. He had to force himself to calmness so that he could concentrate on the problems at hand. He took a hot shower, and climbed into the grey battle dress that was standard for all crew members at action stations. Only the rank bars at shoulder and cuff marked him as different from any one of the other eight hundred in his crew.

Barely had he finished when Halvor came into the cabin.

"We are closed for immediate take-off, sir. Commander Brasek confirms that we shall be unable to use the overdrive. The main armament is one hundred per cent effective, and ready for immediate operation."

Rodric nodded, letting the information slip into its allotted place in his mind. This was a situation he knew how to deal with; this was what his training had fitted him for. He asked: "What is the alien's angle of approach?"

"Thirty degrees above the horizon to the south of due west."

"Good. The rotation of the planet should take us below the horizon in about two hours from the alien point of view. As soon as spot control loses her I want both the lifeboats unshipped and moved as far away into the wilds as possible. Get that fellow Decchi to tell

you where there is a heavily wooded valley or something equally effective. Tell off a crew of eight together with one officer and one noncom for each boat. Is that clear?"

If Halvor had any questions he kept them to himself. He merely nodded his understanding.

"Good. When that's lined up, get Parredy and Decchi and a couple of the other Councillors down here, and come yourself."

Rodric turned away with a brief gesture of dismissal, and as Halvor went out, began busying himself with all the detail necessary to preparing the ship for battle. There were a hundred things to remember, checks of every department to be made, reports to be studied and considered—

And before he was half through Halvor was back with Parredy and the rest, all of them plainly apprehensive and worried. Rodric waved them all to seats and faced them from his desk.

"I won't beat about the bush," he began brusquely. "There is an alien ship out there, gentlemen, which will decimate this planet unless something is done about it. Now, I have already laid my plans, and you will do me the favour of agreeing to them without dissent."

"I am arranging for our two lifeboats to be unshipped and sent to a safe hiding place which I want you, Decchi, to arrange with Halvor. As soon as the bulk of the planet is between my ship and the alien I intend to take off and give battle. Make no mistake about it, they know we are here. It is clear that they were at hand when we came out of overdrive, and they have traced us here."

"But—your ship—you said it was damaged," objected Decchi.

"So it is for interstellar flight. But the ordinary power and engines are fully operable. The snag is that once in a fight we shan't be able to run far if we get damaged. We'll just have to sweat it out."

Rodric paused and looked down at the bare table top. "If it comes right down to it," he went on sombrely, "I shall use this ship in a suicide bid to destroy the alien. That is why I am leaving the lifeboats down here. If we are destroyed then they will be able to get back to Earth—if you give them the information they need. It is of vital importance that our people on Earth know that the ship is good, that she vanished because of ill luck and not faulty mechanism. If they know that they can go ahead with their plans for fleets of this class, and the war will be shortened accordingly."

He let his eyes roam over the faces of the Council men before him. There was foreboding and apprehension all around him, but he could pay it no attention.

"Before we take off," he said quietly, "I want to know that the efforts of my crew and my ship will not be wasted. I want to be sure that you will allow the lifeboats to leave with the knowledge that will enable them to get home. Unless I have that assurance my fight out there will be of little use or consequence. I might as well not fight at all."

Blank, confused silence greeted him. Parredy seemed even more shrivelled than before, and Decchi had turned suddenly from middle to old age, so haggard did he seem. The seconds ticked by without so much as a murmur from anyone.

"Well?" Rodric had to force himself to break the spell around him. "Time is precious to me."

Huskily, Parredy said, "We have no choice. If you fail then we shall all fail. If you succeed then we have little enough to give in gratitude."

Decchi nodded agreement. "Of course we shall play our part."

Rodric felt the last trouble slip from him. Before him, now, lay a clear, straight path unhindered by trivialities. He knew his duty and he could do it with a clear conscience. "Thank you," he replied briefly. "And now if you will excuse me, gentlemen, I have much to do in the next few hours."

With Parredy and the rest gone the hours slid away rapidly. The spot control lost the alien below the planet rim when it was still six hours flight away. Half an hour later Rodric stood on the control bridge and watched the two slim lifeboats move away to the south. Harlow commanded one and Scelba the other. Neither of them could contribute anything to the coming battle, but each of them had important information to hand over to the experts on Earth.

The biggest job of all was clearing the natives from the surrounding area. Rodric gave himself half a mile of leeway for take-off, but stray locals insisted on moving closer to see what was going on. In the end he called Parredy to him and told him he would not be responsible for any loss of life incurred.

An hour later, with the alien still five hours out, the hatches slid closed and Halvor announced the vessel ready to lift. Rodric moved to the main view dome and studied the surrounding country through the night glasses. Away in the distance he could see the lights of Decchi's farm. Even though it was now early morning Carla must be awake while her brother flew miles away in the lifeboat.

He turned quickly and waved to Halvor. "Take her up, Halvor."

The ground dropped away beneath them and the hum of the mighty engines brought back the familiar world he had always known; the strange interlude of the last few days was over for ever.

## VIII

Even with the strain of greater things ever present Decchi enjoyed his first ever flight above ground. Rodric had asked him to fly with the lifeboats and show them the hiding place he had recommended far away to the south east. There, almost a thousand miles away, a great range of mountains broke the unevenness of the planet's main land mass. There, too, deep wooded valleys abounded that would provide ample shelter for the two slim craft.

In his youth Decchi had been the member of a band which had explored the wide area between Newville and the mountains, with a view to starting further settlements. The year long journey had given them valuable information about the country, but no effort had ever been made to act upon it. Now, twenty-five years later, the knowledge was proving its worth. The flight took them two hours for Rodric had impressed on them that they must not hurry. Low altitude was essential if they were to be sure that they remained out of the aliens sight below the horizon. Consequently it was still dark when they arrived, with dawn just over an hour away.

By mutual agreement Harlow settled his ship into a valley that was over a hundred miles from the one chosen by Scelba. If anything went wrong with Rodric's plans then at least one ship might escape detection.

Decchi was with Scelba, and when they had landed close under the shelter of an overhanging pinnacle of rock, Scelba insisted that they use the small two man copter for setting up a lookout post at the head of the valley.

He and Decchi, together with two crew men and a portable radar spotting set, made camp in a wooded glade about a mile from the head of the valley, out on the open plain. Scelba's stated reason was that he wanted to know if the alien ship got too close, but Decchi knew that he was anxious about the result of the coming action. Hidden as they would have been in the valley it was unlikely that they would have been able to pick up anything on the spotting set. In the open they would be only slightly screened by the mountains, and that in one direction alone.

"What do you think will happen?" Decchi asked as they waited for leaden minutes to pass before the dawn.

Scelba shrugged and shook his bald head. "I know what Rodric intends doing. Whether it'll work is another matter."

"What will he do?"

"Well, the alien will almost certainly want a planetfall on the daylight side and early in the day. Rodric will have to catch it some fifty thousand miles out in order to avoid damage to the planet's surface. He'll keep the bulk of the planet between himself and the alien until the last possible moment, then he'll get out from cover under full power and hope his plot control can pick up the enemy and blast it before they see him coming." He shrugged. "That's the theory. Trouble is, he'll be working blind, and if the alien makes an unexpected course change that he can't see he may come out looking in the wrong place. Even ten seconds could be fatal."

Decchi felt cold as he listened. The technical details were lost on him, but Scelba's laconic description, with its undertone of fatalism, made him realise exactly what Rodric was up against. He began to realise that the heavy man in the grey uniform was not quite the villain he'd taken him to be. He was a brave man trying to serve his people to the best of his advantage, letting nothing stand in the way of the major issues involved. Carla, he knew, had seen that as well, and seen it more clearly with her woman's intuition.

The minutes ticked away with deadly monotony. The night passed and the stars began to fade with the coming dawn. Even as Decchi stirred with the realisation that the time had almost come, the crew man at the set called huskily, "Ship over the horizon, sir, due west."

"It can't be Rodric," muttered Scelba grimly, "unless the alien is behind the mountains."

"It is the alien, sir."

"What course?"

"Hard to tell—in this direction if anything. Some fifty thousand miles out."

Scelba glanced meaningfully at Decchi. "You see? As I said, making for the dawn landing. I'll lay odds they choose this plain."

Decchi licked his dry lips. "What are they like?"

"Who? The aliens?" Scelba grinned and shook his head. "I wish we knew, it might give us a clue as to the reason for their aggression. We've had slight clues that they're oxygen breathers—but beyond that—nothing."

Decchi relaxed into silence, watching with fascination the crew man crouching over the spotting set. Rodric must come soon if

Scelba was right: He thought of Carla, a thousand miles away, still with the night around her.

Even as the thought took hold the brightness of the rising sun was lost under the great brilliance of a flaring, unnatural fire, far up in the heavens. Decchi closed his eyes against it, tears forcing through his clenched eyelids.

Dimly, he heard Scelba whisper, "This is it." And then another flash followed, bare seconds after. A third and a fourth almost together, and then there was nothing. They huddled stiffly with eyes closed, fearing a further outbreak, but none came. Decchi opened his eyes and looked wildly into Scelba's strained face.

"What—what now?"

Scelba shook his head. He said quietly: "The first and third flashes were the alien, the second and last were Rodric's."

"How can you tell?"

"Different colour—very slight, but you get to know it after a lifetime's experience." He let out his breath in a long sigh. "It is all over. All we can do is wait."

"No contact, sir," said the man on the set. His voice shook slightly as he repeated, "No contact."

"And Rodric?" asked Decchi.

"He was below the horizon from here. Perhaps he still is." Scelba stood up and stretched. "Come on, we'll get back to the lifeboat."

The sleepless night was almost gone. Carla had sat in the parlour together with Parredy and the others who had decided to wait with her, and watched the time pass with maddening slowness. None of them had known what would happen—none of them knew when the battle would take place. The only concrete thought that any of them had was that death and destruction were very close at hand for all of them.

Carla, tired of sitting silently, went out on to the verandah. Dawn was less than an hour away, and perhaps with the sun would come new hope and an end of waiting. She looked into the star flecked night, and thought of Rodric out there, at home in the immensity of space. Just for a moment, up there in the control bridge, she had touched a man beneath the cold, stiff uniform. A man whose background was war, whose life was duty, whose home was a starship. She wondered what manner of place Earth must be with two centuries of war behind its people. It must be like Rodric; hard and

disciplined, geared to sudden death and disaster, but with a tenderness under all that could come to life—

She flinched as the sky lightened under a false dawning sun, and the brilliance faded even as realisation of its being was born. A second, a third, and yet a fourth time the night flared unnaturally around her. Then there was peace. There was nothing else to tell her that a battle had been fought and won and lost, that beings had died in the cold of space light years from their homes. She heard the door creak open, and the others came out to join her.

She heard Parredy say softly, "That was it. It must be over."

A cold chill settled over her, and she turned quickly inside the house with an emptiness inside her that could not be explained.

Even as the plot control picked up the image of the alien and the marker bearings for the main armament clicked automatically into place, Rodric knew that he had lost two seconds that might be fatal. So, too, did the others around him on the control bridge, but there was never a hesitation in their swift, trained movements.

The first blast was away less than a second after that of the alien, but that fraction carried oblivion with it. Rodric tensed against it, but it passed and the ship still lived. The second alien attack hit them and the ship faltered, shook, recovered, and let loose her own second blast even as the great engines died within her.

And still oblivion did not come.

"No marker," reported the spot control.

Rodric relaxed slightly, and caught Halvor's eye anxiously upon him.

"Engine check," he requested tersely, but even as he spoke the steady, muted hum awoke and spread through the ship. "Cancel that. Navigation, plot for return to base. Stand down from action stations, Mister Halvor."

Tension slipped from him, and for the first time in his life Rodric felt that he was going home.

LAN WRIGHT



# *Facts Behind Fallout*

*In this article a popular writer on scientific subjects describes the effects of Hydrogen Bomb fallout*

At twelve minutes past six on the morning of March the first, 1954, the *Fortunate Dragon* sailed in the early sunlight alone in the vast blue circle of the Pacific. The weather was calm, with a fresh 30-mile-an-hour wind. The twenty-three Japanese fishermen aboard the trawler were not at all surprised when a second sunrise flamed all along the horizon.

They knew they were not far from Bikini Island, test area. The Americans were probably trying out another atomic bomb. Within six minutes from that second sunrise, the sound of thunder reached them. The time lapse between flash and noise gave them the distance, about seventy miles. They were untroubled, confident that they were well outside the danger area.

Unfortunately for the crew of the *Fortunate Dragon*, they were only partly right. They had indeed witnessed an atomic bomb explosion; but of an A-bomb used, not as an end in itself, but as the start of an even vaster explosion.

And, even then, that hydrogen bomb was used to create an even greater lethal weapon that scourged 7,000 square miles of the Earth's surface with radio-active death.

That the hydrogen bomb explosion got out of control, in so far that it was twice as great as the designers of mass death had expected, is beside the main issue. The basic design of a hydrogen bomb enables them to be manufactured of any size from a megaton equivalent upwards. The main point is that this weapon was deliberately designed to spread radio-activity over as wide an area as possible.

To achieve this result the bomb was fitted with a shell of natural uranium-238, which cannot be used for the critical mass segments of an A-bomb and which is available cheaply in large quantities.

The uranium-238 absorbs the high-speed neutrons from the thermo-nuclear reaction and creates intense radio-active materials in the cloud. It produces a hydrogen bomb plus. To distinguish it from other weapons, this is known as the U-bomb.

Two hours later the effects were felt. A cloud of fine white dust flakes began to fall on the *Fortunate Dragon*. To look at these flakes hurt the eyes of the fishermen. Within a short time after the dust had fallen on them their skin began to itch and then to burn. The Japanese appear to be an unfortunate race when it comes to dealing with nuclear weapons.

The crew of the *Fortunate Dragon* were the first victims of the U-bomb and of thermo-nuclear fallout.

Any hydrogen bomb can cause fallout, particularly if the fire-ball touches the surface of the Earth and draws water and soil into it. But this material is not as intensely radio-active as the products from uranium or cobalt exposed to the neutrons. Another effect is that radio-active water and gas molecules are deposited on the surface of the solid particles and trapped. Very soon these particles begin to drift down and are scattered along the Earth in the direction of the wind for a period of several hours. The lightest particles fall at the greatest distance from ground zero.

An ordinary atomic bomb can only cause fallout under very special circumstances and the intensity is not very great. It is only likely if the bomb is exploded underwater or if a rainstorm immediately after the explosion causes the fission products to be deposited with the raindrops. Even then the area contaminated would be relatively small, probably less than a square mile.

The fallout from the U-bomb, in the shape of a huge cigar, covered an area of over 7,000 square miles.

The fission products from the uranium-238 sheathing the U-bomb mainly have short half-lives. A city and the surrounding countryside could be U-bombed and made completely uninhabitable for a few days ; but it would no longer be dangerous when an invading force wished to occupy it.

The C-bomb uses a sheath of cobalt, which gives the gamma ray emitter cobalt-60. This has a half life of five years.

An ordinary H-bomb would destroy the centre of a city itself ; but it would not cause the complete evacuation of the whole area, nor would it cause intense fear in the people outside the area of immediate damage. Morale would be lowered and people from the area would be suspected of carrying radio-activity on themselves and in their clothing. Food and crops would be contaminated, water supplies made undrinkable.

But with the U-bomb and the C-bomb, this area of contamination would be spread in a devastating avalanche of radio-active dust from the sky. In the Bikini U-bomb instance, the radio-activity was so intense up to 150 miles along the direction of the wind from the explosion, that every unprotected person would have been very seriously injured or would have died. The crew of the *Fortunate Dragon* were fortunate in one thing only. They were on the edge of the fallout.

They took no precautions and allowed the white flakes to settle on their skins. They continued to use their fishing ropes and nets before sailing the five hundred miles back to Japan with their catch. As a result, one man died and the remaining twenty-two had severe radiation sickness and were in hospital for some time. The fish they had caught were dangerously "hot" and were buried. The U.S. is to pay the Japanese two million dollars damages for these results. The money will go to the injured fishermen and business concerns whose fish were harmed by radio-active deposits.

At the same time as the *Fortunate Dragon* was undergoing these experiences, twenty-eight American observers on nearby islands together with 236 natives were exposed to the fallout. They were immediately evacuated and treated so that they escaped the worst hazards of the radiation sickness.

The H-bomb produces 100—1,000 times as much radio-active products as the A-bomb, of the same kind. The gamma ray intensity decreases 50 times between 1 hour and 24 hours after explosion. After 10 days it has decreased by a further factor of 20 and by a further 10 after a hundred days. But it is the particles from one fiftieth to one thousandth of an inch in size forming the 30 to 1,000 million tons of material thrown into the air that cause the long-term damage. The larger particles fall out quickly, as at Bikini, but the remainder are carried above 10 miles into the stratosphere where they spread round the world, falling out over the years. They cut down sunlight slightly—the 1883 explosion of Krakatoa sent between 100 and 20,000 million tons of dust into the air and reduced solar radiation over the Earth by 10%.

Natural radio-activity at ground level in England is 0.1 roentgens, caused by natural ground radiation, cosmic rays and radio-activity in the human body. In England, so far, ground level radio-activity dosage due to H-bomb fallout is about 0.01 roentgens, 1% of natural radio-activity of dust in air. There is a further 0.03 roentgens to come. Radio-active carbon from the H-bomb is about 300,000 curies, 0.1% of that naturally present in the air above Earth due to cosmic rays.

It appears, therefore, that there is little to fear from H-bomb explosions causing genetic effects. So far we don't have to worry about three-headed babies being born in a few years time. People working in houses and offices are shielded from most of the fallout that we have had. So far.

If 1,000 H-bombs were exploded in any future war the average radio-activity level would go up to 25 roentgens.

A 100% increase in radio-activity would double the number of mutations in each generation. So that 25 roentgens would be disastrous to the human race. In fact, there wouldn't be any human race left, not even those—things—that survived the actual bombing.

So much, then, for "getting away from it all" on a tropical island. The remorseless dust would drift round and round the world. There is no way to prevent fallout, the intensity and spread of the radio-active particles is governed solely by atmospheric conditions, as the force and direction of the wind.

With a brisk easterly wind the greater part of southern England could be covered by a fine white snow from a bomb dropped over London—from a U-bomb it would be most effective for a few days, from a C-bomb it would last for years.

There is no real defence against fallout, its effects can only be minimised. Evacuation of threatened cities, building of deep air-conditioned shelters outside the main target areas, decontamination and hospital centres where the newest treatments are instantly available are the only hopes for millions of people.

A grisly fact is that a nation losing a global war could explode its whole stockpile of atomic and thermo-nuclear weapons, liberally salted with natural uranium and cobalt, and create a fallout over the whole Earth such that all living creatures, unless cringing in self-contained underground shelters, would die. That would need only a mass of about 500 tons. Civilisation would be finished.

So that there are two levels of fallout. One, the ominous cigar-shaped area where the deadly white flakes fall, can be understood and some steps taken to protect human beings from the full effects.

But the other level, the drifting dust which seeks out everyone, on a tropical island hideout or not, throws a dark cloud over the future. We do not believe that this will be allowed to happen.

Streets and houses can be decontaminated by sluicing down with detergent solutions; we have yet to find a method of decontaminating the human mind of its stupidity.

JOHN NEWMAN





# Something to Read...

*New Hard-Cover Science-Fiction Reviewed by*

KENNETH F. SLATER

Back in *NEBULA* 22 I invited you to send me your definitions of Science-Fiction. As that issue has, at the time I'm writing this, only just reached the stands, the postmen have not yet started to totter up the path, bowed down under the weight of mail.

However, another correspondent to whom I'd outlined the point of the dictionary-definition of the word "science" has come back with a point I'd rather glossed over, and that is that acceptance of the complete definition of "science" could take us too far the other way; instead of narrow, clearly-defined "personal" meanings to the term "science-fiction" we would have a "blanket" coverage that would include practically everything. The efforts of a farmer to breed a slightly better strain of milch-cow, love-interest provided by his attachment for the daughter of the squire; action in the form of the farmer's battles with his opponent (same squire, to keep it simple) who is ag'in these new-fangled methods of artificial insemination. Light relief provided by Joe, who spends his

time muckin' out the byre and falling into his labours.

Somehow, I can't see myself enthralled in such a yarn as a science-fiction story, but my correspondent is perfectly correct in pointing out that acceptance of the full definition of "science" would also mean acceptance as science-fiction stories with even less claim to our interest than the above "possible". At the same time, he also agrees with me that the present limited definition in common use is not enough. It is not possible to limit the "science" in "science-fiction" to a few, or even to all, of the physical and/or applied sciences.

Accordingly, and with malice aforethought, I therefore recommend as the best book on the "science fiction" market at the moment Groff and Lucy Conklin's **THE SUPERNATURAL READER** (Cassell, 349pp, 16/-). The name of Groff Conklin and the term "s-f anthology" were almost synonymous a few years ago; let us hope that this title may be the first of several more expertly chosen anthologies of "borderline" literature.

Let me firstly assure you that "supernatural" doesn't mean "ghosts", in this instance. It means things like Ted Sturgeon's **SHOTTLE BOB** (that story does include ghosts, true, but not of the normal kind) and Herb Paul's **THE ANGEL WITH PURPLE HAIR** (which includes a very charming lady angel who thinks nothing of a visit to a cocktail bar). On the other side, and from another era, Groff (or Lucy) has selected F. Marion Crawford's **FOR THE BLOOD IS THE LIFE**, a straightforward and spine-chilling vampire story, and **THE MOONLIT ROAD**, a smooth and rather terrifying short by Ambrose Bierce. Changes on the story of King Midas are rung by Charles R. Tanner in **ANGUS MACAULIFFE AND THE GOWDEN TOOCH**, and Ray Bradbury's private brand of almost-horror is represented by **THE TOMBLING DAY**. Other contributions (there are twenty-seven in all) include Will Jenkins, A. E. Coppard, Fitz-James O'Brien, "Saki", Edgar Pangborn, M. R. James, Stephen Grendon. . If you don't insist on "practical science" let me recommend you try this cocktail of the borderline sciences of mythology, magic and psychic phenomena, well-stirred with a swizzle-stick of writer's craft.

**OPERATION OUTER SPACE** by Murray Leinster (Grayson and Grayson, 190pp, 10/6) belongs to the space-opera class. Well-written, fast-moving, it makes no pretence to be anything but an action story with a cosmic background. Jed Cochrane, publicity man, is bulldozed into the job of making a name for a "scientist", Dabney.

Dabney has a certain influence with the firm employing publicity expert Cochrane, and so Cochrane gets the job pushed onto him. Jed soon discovers Dabney is no scientist—Dabney is not anything much but a bundle of neurotic tendencies—and that Dabney's discovery (a means of sending faster-than-light messages from the moon to Terra, and back) has been "bought" from the real discoverer, Jones. The discovery, as such, is currently worthless. Mankind, not having got further than the moon, is not worried about sending *messages* f.t.l. But when Jed takes over, and gets on the line of "if messages, why not . . ?" things start to develop, and before long we have Jed, Jones, and some other folk (including Babs, Jed's secretary, in the story for romance) taking off in a made-over space-ship for a short tour of the universe. There are dramatic interludes, some really excellent scenes when Jed is fighting to get support—financial and otherwise—for his FTL ship, emotional highspots, and although the real antagonist in the story is the universe and the limits it places on man's endeavours, Mr. Leinster has set up Mr. Dabney as nasty little niggler, hanging around grabbing off kudos but making sure of avoiding all blame for failure, for the benefit of those readers who need a personality to hate. Mr. Dabney equates with Mr. Universe (or Mother Nature) on a personal level. I wonder if this is why some otherwise excellent stories seem to misfire—must we always have a personalised opponent as well as the "real" one? Anyway, philosophical consider-

ations by the way, this is a good and exciting yarn. Recommended for all space-opera fans.

**THE TREMBLING TOWER** by Claude Yelnick (Museum Press 160pp, 10/6) is a translation from the French. It bears some resemblance to Eden Phillpotts' **ADDRESS UNKNOWN**, but lacks most of the sociological and philosophical argument which made up the larger part of the latter. Christmas in a lighthouse, and a storm wrecks a Norwegian vessel—one sailor survives and is rescued by the two keepers. The lighthouse is subject to some influence which is causing "vibrations", and there is some doubt whether these are caused by a material of a supernatural influence; the underkeeper favours the supernatural, and keeps referring to "the Ankou", —death, or the bringer of death. About halfway through the book the influence has developed to the point where it effects light, and Olaf, the Norwegian, had advanced a theory that the influence is caused by "the Others"—someone "outside" (shades of Love-craft?). Olaf tries to get into communication with the Others, and there follows a series of experiments culminating in communication, during which the Others announce they are vibrations, and the vibrations men make are disturbing and hurting them, and man will cease hurting them, and man will cease to make them or else. One of the Others turns out to be Maria, the love of the lighthouse keeper who had vanished some years before, and of whom he was believed to be the murderer.

Although well written, this book is not likely to appeal to the modern science-fiction reader. I would recommend it to the older "fans" who can still re-read early Science Wonder Stories, 1929 vintage Weird Tales, and similar material with enjoyment. But the plot content has the making of a short-story in the modern usage of sf, and those of you who can't qualify as above will probably find it too slow for pleasant reading.

On the paperback front, Corgi have issued Arthur C. Clarke's celebrated **THE CITY AND THE STARS**, at 3/6. And from Penguin come a couple of Thorne Smith humorous fantasies, **THE NIGHT LIFE OF THE GODS** and **TOPPER TAKES A TRIP**, at 2/6 each.

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# The 27th Day is the 28th Book

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### **Further Outlook** by W. Grey Walter

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*News and advance Film Reviews direct from Hollywood's*

FORREST J. ACKERMAN

As the picture's in conventional black and white you'll have to take the dialog's word for it that the little men are actually green, but little they definitely are, being a quartet of Hollywood's dwarves. Made up with Lorrel-like eyes bulging from macrocephalic heads, the 4 bulbous-brained interplanetarians created by Paul Blaisdell represent a sinister threat to the townfolk (especially teenfolk) of a small American community in **INVASION OF THE SAUCER-MEN**. Another Paul, name of Fairman, wrote the original story on which this screenplay was based, and it was called "The Cosmic Frame" and appeared in the May 1955 *Amazing Stories*.

Whereas **EARTH VS. THE FLYING SAUCERS** was a kind of poor man's **WAR OF THE WORLDS**, but poor, **INVASION OF THE SAUCER-MEN** is a pretty good little film. Unpretentious, it spins an almost "homey" little yarn whose mood is a well-integrated mixture of humour and horror. The original story, downbeat with a tragic O. Henry ending, has been beat up considerably in its translation to the screen but has not suffered in the process and emerges as an

acceptable sci-fi comedy cum chills.

The lead is played by a real life fan, Steve Terrell, who, driving on a dark and lonely road with his girlfriend, has the unnerving experience of running over what at first appears to be a young child and then turns out to be an extraterrestrial. In as gruesome a scene as I've seen in a scientifilm, the mangled arm of the dead saucerian detaches itself from the alien's body and, guided by a single unwinking orb attached to its gnarled wrist, crawls away—to menace another day.

Wasn't it Jack Williamson who had aeroplanes growing on trees in "Dragon's Island?" Strange things are happening and the spirit of Charles Fort survives. In **INVASION OF THE SAUCER-MEN** the saucerites put people in their cups by injecting them with about 200 proof alcohol, and this they do by extendable natural growths at their claw-tips which do not resemble but are hypodermic needles!

Not since the surrealistic *Chien Andalou* and the subrealistic

psuedo-scientifilm *Sex Maniac* has there been such a gory scene involving an eyeball as when one of the saucer-men gets an orb gouged out in a bloody battle with a long-horned bull.

But from the clever cartoons that accompany the credits at the beginning of the picture to the final shriek that closes it, Eddie Cahn directed with tongue in cheek, and the laughs balance the fright-induced epidermal lumps.

The theatre managers of the globe may have to apply stretchoscope to their marquees when **THE MONSTER THAT CHALLENGED THE WORLD** visits their cinemas, but word of mouth should have the customers queuing up. It's good. Novelist David Duncan, remembered for his books "Dark Dominion" and "Beyond Eden", dreamed up the original plot on this one, which a gal named Pat Fielder (whom I understand is a bit of a looker) amplified. The Monster is a handsome eyeful. Hideous, that is. A kind of kingsized mandibled caterpillar, amphibious in nature, that crawls out of a super snail's shell to raise hell in a fascinauseating fashion. Considering it spawns 3000 viable eggs when giving birth to offsprings, it qualifies as one of the most killworthy creatures of all time, for the horrors upon hatching have voracious appetites. If nothing along the line of monster menace really happens in this film that you haven't seen or read before, at least it happens very well, the construction being nearly clichéless and the direction diligent. The Monster itself is costly and well-controlled, having been designed by the same artisan who

created the Great White Whale in *Moby Dick*. Despite its subject matter, this is one picture that does not move at a snail's pace.

A second-rate feature, **THE VAMPIRE**, does not have much new to say or show, and is more a rehash of *Dr. Jekyll and Mr. Hyde* than *Dracula*. Our V.I.P. (Vampire in Protest) is a doctor who accidentally takes a vampill instead of an aspirin, and thereafter periodically becomes a beast man. Actually he becomes only a psuedo-vampire, for the transformation does not go so far as to give him the supernatural power of turning into a bat, nor does he fail to cast a reflection in a mirror, nor are his victims vampirized in turn. He bites, and that's about all.

Scheduled for future previewing: **THE AMAZING COLOSSAL MAN, LAND UNKNOWN, THE INVISIBLE BOY, THE DREAM MACHINE, A FIEND WITHOUT A FACE, THE BLACK SCORPION, CREATURE FROM GREEN HELL, FROM HELL IT CAME and THE GIRL FROM 2 MILLION A.D.**

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WALTER WILLIS writes for you

It occurred to me the other day, partly as a result of my own sensitive perceptiveness and partly because your editor had written suggesting it, that when I mention a science fiction personality and you read about him, we are probably thinking of two entirely different people. Take Mr. E. C. Tubb, for instance, whose name keeps cropping up both in this column and in the rest of the magazine, which I understand some of you read as well. You keep voting Mr. Tubb your favourite author year after year, but you probably know only two things about him. First, that he writes pretty good stories. Second, that he is short and fat in appearance. I have news for you. Only one of those statements is true.

I have read as many Tubb stories as anyone in fact probably more, because when we were both humble little fans I rejected one of his stories for my fan magazine and I haven't seen it since . . . but I still don't think of him primarily as an author. He has other talents, and there is one

sphere of activity in which they can all be brought into play at once, with prodigious results. I remember vividly the first time I witnessed this remarkable phenomenon. It was at the first science fiction Convention I ever attended, some six years ago. I had been out for a cup of tea and when I got back the programme seemed to be over. All there was to be seen in the hall was a mass of fans grouped round a tall hungry-looking figure holding up a book and shouting "*What offers for this book by Olaf Stapledon?*" The auction, I thought. I had little interest and less money. I started drifting away. "*They'll never be another Olaf Stapledon you know,*" the auctioneer continued. "*There was only a limited supply.*" I stopped. The resonant voice went on. "*Look at it. Beautifully bound in gun metal grey, showing up fingerprints to advantage. Observe the narrow margins—no hunting all over the page for the print. For another sixpence I'll sign it for you.*" Fascinated, I joined the

crowd. "Who is it?" I asked someone. "Ted Tubb, of course," he said. "Shhh." Now he was trying to get rid of a lurid pulp magazine. "*An hour of erotic entertainment. This sort of stuff will make you independent of your girl friend.*" Someone who had read it jeered incredulously. Ted opened the magazine at random and pretended to read aloud a brilliant parody of a pulp author's purple paragraph. He has an utterly fantastic ability to improvise at will whole fluent passages in any particular style. "*A First Edition!*" he declared, "*The plates have been smashed. Burned in effigy in France and smuggled into the country in the guise of nylons. Did I hear a shilling? Come out from below that chair and say 1/3. We sold one of these for ten bob and it was stolen from the purchaser by an outraged fan. What, only 1/3 for this hideous travesty of human drama? Do you want me to commit suicide right here on the floor? All right then, 1/3. I'll take your trousers for deposit.*" And so on, inexhaustibly, for hour after hour. It was a veritable tour de force, and I have never seen anything to surpass it.

Until, that is, another British Convention some years later. The programme had collapsed in utter chaos, the Committee wondering whether they had the strength to throw themselves in the canal or whether they should just lie there waiting to be lynched. Suddenly

the sullen muttering of the audience was stilled: a tall dark pale-faced figure had mounted the platform. With an almost audible *click* everything came right again. "Ted's here," people whispered to one another, and sat back happily. Their confidence wasn't misplaced. Single-handed and without any preparation he took over from the battered corpse of the Official Programme and carried the Convention to a hilariously successful conclusion some six hours later. I can think of only a few people who could have done this, and most of them live in penthouses with a pride of press agents and drive around in Cadillacs. Ted on the other hand lives in a small suburban semi-detached villa with his wife and two children, and drives a car which looks like a pile of junk on the way to the scrap-heap to give itself up. He's an example of a phenomenon which seems to me peculiar to science fiction fandom: people who are little short of geniuses but who restrict their gifts to the tiny world of fandom, either because of some impractical streak in their nature or because what they do, they do for fun, and it would spoil it if they did it for money.

Ted Tubb doesn't seem impractical: he is always thinking up ingenious schemes for making money and discussing them hilariously with friends until the early hours of the morning when every-

# ONE GUINEA PRIZE

To the reader whose Ballot Form (below) is first opened at the NEBULA publishing office.

All you have to do, both to win this attractive prize and to help your favourite author win the 1957 Author's Award, is to number the stories in this issue in the order of your preference on the Ballot Form below and post it to NEBULA, 159, Crownpoint Rd., Glasgow, S.E., immediately.

**The Ties of Iron**

**The Eyes of Silence**

**Further Outlook**

**Artifact**

**In The Beginning**

**Proving Ground**

*Name and Address:*

Mr. Patrick F. James, of London, E.11, wins the One Guinea Prize offered in NEBULA No. 21. The result of the Poll on the stories in that issue was:—

1. SOMEWHERE A VOICE  
By Eric Frank Russell 30.1%
2. ALL THE WORLD'S TEARS  
By Brian W. Aldiss 23.3%
3. TREASON  
By John Brunner 20.9%
4. DREAM WORLD  
By Ian Wright 15.0%
5. THE POOL  
By A. Bertram Chandler 10.8%

The result of the Poll on the stories in this issue will appear in NEBULA No. 27.

one goes to be firmly convinced they're going to be millionaires tomorrow. They aren't, though. The schemes never seem to come to anything: the idea was the thing—the actual work is too much trouble and it's more fun to think up another idea. With some other London fans, for instance, Ted invented a science fiction parlour game which would have superseded every indoor sport played by more than two people. It was fascinating, but by the time they had finished with it, it took three hours to learn the rules and one game lasted a week. They couldn't bear to destroy its subtle beauty by simplifying it for the crass world of commerce, so now they just play it among themselves. This is typical, and more symbolic than you might think . . .

## FANZINE REVIEW.

*Ploy* No. 9 Ron Bennett, 7 Southway, Arthur's Avenue, Harrogate, Yorks. 1/- per copy. This issue of what has become one of the best and most reliable of British fan magazines is distinguished by another instalment of the brilliant column by Phoenix (which can be appreciated by anyone with a sense of humour even if he wouldn't know a fan if one came up and bit him in the leg) and an article by John Berry to which almost the same applies. Highly recommended for these alone, and you may find much else of interest too.

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NAME.....

ADDRESS



Dear Ed.: I am writing to you simply because you asked us to in your last editorial, normally I hate writing letters, but on this occasion I feel that somebody should write to congratulate and encourage you on your efforts with NEBULA.

Briefly NEBULA is first class in every aspect although the drawing on the back page always annoys me. The photo article, stories and paper are all wonderful, but your editorial, it just gets me. I don't know why I'm sure, but the first thing I do when I buy NEBULA is study your editorial.

A little while ago you were encouraging young people to take up s-f writing. I decided to follow your advice and write. The one or two stories I have written have been ridiculous, somehow I couldn't put the plots down on paper.

I am wondering if you could give any useful hints, or if you could suggest a fairly cheap but good postal course.

J. H. NEWMAN,  
Kettering, Northants.

*\* As with the advertisers I mention in my editorial this time, many instructors in the art of writing are somewhat biased against s-f, possibly because they have never taken the trouble to become acquainted with it. If any young reader like Mr. Newman would like an opinion on a story he has written I suggest that he send it direct to me in care of NEBULA and if I feel that it shows sufficient promise, I'll be glad to do what I can to help.*

*Always remember, no one can ever judge the quality of his own story and a little advice from someone with experience in the field might well be the means of assisting an embryonic E. C. Tubb to the heights.*

Dear Ed.: Why, when the moral of almost all science-fiction stories is peace and unity, do you insist in making NEBULA so nationalistically British in policy?

JOHN ALLISON,  
London, S.W.4

\* *A very good question, John. You see, contrary to what you might imagine from some remarks I have made in this magazine, I too believe in unity and the "One World" sentiment inherent in many science-fiction stories. However, for quite a number of years now it would seem that far too many people have been thinking of this "One World" as being called America with its capital situated either in Hollywood or Chicago.*

*Now I have a sincere admiration of the Americans and believe they have contributed a great deal to science-fiction, and indeed to all contemporary forms of art and literature. But I also believe that Britain has still a great deal of her own to give and, as I happen to be a British citizen, I intend to make NEBULA original and distinctively British in policy and content rather than merely an imitation of American magazines and inevitably second-best as a result.*

Dear Ed.: Now that you are publishing an occasional ghost story, is there any hope of seeing a regular series of articles on haunted houses in future issues of "NEB?"

WALTER KENNEY,  
Birmingham, 5

\* *Not unless a large number of readers request it, Walter.*

Dear Ed.: Try as I may I can find no s-f fan club in the Glasgow area for the younger readers. Could you put me on to one please?

JAMES McKELLAR,  
Glasgow, S.E.

\* *To my knowledge there is no club in the area mentioned exclusively for young s-f-readers but if anyone else is interested and cares to drop me a line I'd be glad to pass your letters on to James who says he would be interested in helping to form one.*

Dear Ed.: I have just finished reading NEBULA No. 21 and feel I must write to you to let you know how much I enjoyed this number.

"Somewhere A Voice" was my number one choice this time. It was truly a wonderful piece of work by a real master in the art of science-fiction writing and it drew a real moral. Courage and virtue often lies where we least expect to find it and quite often a time of stress can show people up in their true light. Thank you Mr. Russell and you, too, Mr. Hamilton.

The other story which almost ties with "Somewhere A Voice" is "All The World's Tears". Its only drawback was that it was very short. It truly gave us a moment out of time from an era many centuries ahead. This story was a highly polished jewel

and will doubtless be reset many times in the future anthologies.

Other stories in this issue tended to be somewhat overshadowed by these two but nevertheless "Treason" was an exceptionally well-written novellette. The more unusual as it was convincingly told from the viewpoint of an alien race and looked in from outside, so to speak, on the human beings of a future time.

I should like to congratulate you on both the front and back covers of this issue which I thought were quite excellent and very attractive amongst your rival magazines on the news-stands and of course for the

"Photo-Feature" which lends NEBULA an air of dignity and authenticity which is most pleasing.

In conclusion, I should like to congratulate you on the new monthly publishing schedule which you are adopting for NEBULA. If all your monthly issues are like No. 21 there won't be a science-fiction magazine anywhere to touch it.

ROBERT LLOYD,  
Manchester, 4.

*\* Thanks for the letter Robert. I only hope that everyone enjoyed this issue as much as you did.*

**LOOK HERE—continued from page 2**

Our most prolific author—needless to say—was E. C. Tubb, whose stories in NEBULA could have completely filled four issues of the magazine! Mr. Tubb has also received more votes in our regular ballot than any other author and has won our Author of the Year award each year since its inception—a truly magnificent record.

Other authors who have become NEBULA favourites are William F. Temple and Eric Frank Russell (who, with E. C. Tubb, did so much to build up the magazine in its early days) and Kenneth Bulmer.

About 12.9% of our stories have been written by authors who made their first-ever appearance in NEBULA. Among those who have gone on to become really big names in science-fiction writing are Robert Silverberg, Philip E. High, Bob Shaw, David S. Gardner, Peter Ridley and many others—all NEBULA discoveries.

Before finishing this time I should like to say a warm and personal thank you to each and every one of you who, by regularly paying your 2/- to read this magazine, have made its progress and prosperity possible. Each of us who has a hand in producing NEBULA is endeavouring to please you and I hope that our success in the past five years will continue for many more to come.

*Peter Hamilton*

## **JUPITER THE MIGHTY**—*Continued from inside front cover*

atmosphere, but the red end penetrates more deeply, although still not far enough down to reach the solid surface.

Outward signs of the terrible turmoil in the Jovian atmosphere can be seen in the major wind belts where varying colours make Jupiter the most brilliantly pigmented of all the planets seen from Earth. We call them winds for lack of any word to describe mass movements that would make our hurricanes and typhoons seem mere zephyrs by comparison.

Driven by the great heat engine of this fast-spinning sphere—a day and a night amount only to ten hours—the almost liquid atmosphere screams across a surface where no biped could stand an instant and live.

Only tortoise-like creatures, streamlined and with tremendous suction pads for feet, and able to hug the ground and resist the maniacal buffeting could survive the scouring winds. Or, possibly, light creatures that travel endlessly around the globe, borne helplessly by the winds.

Gravity amounts only to three g's at the surface and this oddity is explained by the very size of Jupiter. But deep down the pressure rises to 800,000 atmosphere—enough to convert the gas we know as hydrogen into a tough, dense solid.

The enigma of Jupiter lies in the Great Red Spot. This is a brick red oval, 30,000 miles long and 7,000 miles wide that seems to float in the atmosphere, changing position with reference to the Jovian equator. It is seen at its clearest in the little-penetrating blue light.

The colours of the wind belts of Jupiter vary widely from red to grey, with yellow, lavender, green and purplish-white zones. Even these are fickle, changing their colour according to the distance that separates Jupiter from the Sun.

When a sphere whose outer layers are loosely compacted revolves at high speed, the globular shape gradually becomes flattened and the sphere oblate under centrifugal force. Jupiter's diameter at the equator is thus distorted to 5,000 miles more than the polar diameter. For comparison, the difference between polar and equatorial circumference of Earth is 27 miles.

Twelve moons accompany Jupiter on his twelve year long orbit around the Sun. Only two of these, Ganymede and Callisto, are believed to have condensed out of the primeval gas and dust clouds at the same time as Jupiter. The others Io and Callisto and the eight tiny moons between 20 and 100 miles in diameter, are thought to be asteroids once freely wandering and then, one day venturing too close to the hungry old giant of the system, becoming caught and chained to him by unbreakable bonds of gravity. Eventually, they will spiral down on to the surface to explode in a burst of supernal fire—barely noticeable on that vast corporation.

Jupiter is fickle, but beautiful. His beauty owes nothing to the magic of a ring system, of the greens and blues of our own world or the pearly radiance of a misty veil. His grandeur comes from size and colour and a cosmic sense of the power unleashed across that awful surface among the liquid ammonia rivers and the eternal mountains of ice where the lightning of the gods disports.

But, one day, perhaps, man will find a way to peer beneath that choking thousands of miles deep atmosphere. One day, even if his body is denied the privilege of wandering among that fantastic wonderland, his machines will roam that alien surface and telemeter back stories beyond our present imaginings.



Another scan  
by  
cape1736

